

Repeal of Rail Excise Tax Hangs By Mere Thread

**Opposition Seen Against
Bill to Remove 3% Federal
Charge on Rail Freight**

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON—Success of a proposed repeal of the 3% excise tax on freight as contained in an overall railroad relief measure, hangs by a thin thread. The measure, S.3778, introduced in the Senate by George Smathers (D., Fla.) has formidable opposition in the administration's reluctance to grant any reduction in taxes this year.

Prior to the White House announcement of this position, Sen. Smathers told the Senate last week that a poll he had made of the Senate showed about a fifty-fifty split in that chamber on his bill. He admitted that the statement of the White House against any tax reductions this year may have caused some of the indicated supporters of his proposed repeal of the freight excise tax to shift their position and support the administration.

Thus it seems that enactment of the repealer of the excise tax is at best uncertain at this time. How-
(Turn to EXCISE TAX, page 20)

USDA Makes List of Insects Most Talked About in 1957

WASHINGTON, D. C.—The corn earworm (also known as the bollworm or tomato fruitworm), the house-fly and the mosquito were named more often than any other insects in state reports of some of the more important pests of 1957, the U.S. Department of Agriculture has reported.

Plant mites (especially spider mites), the European corn borer, aphids, and grasshoppers were also frequently mentioned as crop pests, and termites and cockroaches as nuisances to man. Among pests of livestock, the horn fly, cattle grubs, ticks, and cattle lice were most often listed.

Tabulations from agricultural agencies of 45 states of some of their more important insects during 1957 are published in "Cooperative Economic Insect Report" (dated May 30) by USDA's Agricultural Research Service.

The wide variety of pests named among the ten crop and forest pests, and among the more important insects affecting man and animals, again revealed the geographical diversity of insect problems across the

Nutrient Supplies Adequate, but Down 2% from Fiscal 1956-57

Fertilizer Situation Report Highlights—

- ★ Supplies of N, P₂O₅, and K₂O expected to be adequate for meeting domestic requirements, exports.
- ★ Supplies of N in 1957-58 expected to be up 5%.
- ★ Net quantity of P₂O₅ will be off 4.3%.
- ★ Supply of K₂O will be down 6.7%.
- ★ Synthetic ammonia capacity last Jan. 1 totaled 3.9 million tons of N.
- ★ Mid-1958 ammonium phosphate plant capacity: 316,000 tons of P₂O₅.
- ★ Domestic potash production capacity now stands at an estimated 2.5 million tons of K₂O per year.

Cotton Council Executive Urges Farm Law Changes to Avoid Critical Situation

WASHINGTON — William Rhea Blake, executive vice president of the National Cotton Council, has forecast a critical situation in the cotton industry unless changes are made in the federal farm program during the current session of Congress.

In testimony before the Senate Agriculture Committee, Mr. Blake said existing laws must be changed to allow production of adequate supplies of cotton at competitive prices. He pointed out that the secretary of

agriculture has estimated a 20% cut in cotton acreage for next year.

This, he noted, will put strong upward pressure on growers' unit production costs, further aggravating the already critical cost-price squeeze.

The existing short supply of better quality U.S. cotton will become even more serious with a cutback in the 1959 crop, forcing mills to use lower grades and encouraging the substitution of rayon, Mr. Blake said.

"If we had an adequate supply and a competitive price that mills could depend on under permanent law, 14 to 15 million bales would likely be consumed and exported in 1959. This is compared to an estimated 12 million bales that will be sold next year as a result of short supply and high price conditions under present law."

Under existing laws, the secretary of agriculture also will have to increase cotton price supports at a time when cotton is at a serious price disadvantage in competing with rayon, Mr. Blake added.

"Higher price of U.S. cotton," he warned, "will greatly encourage expansion of foreign cotton and rayon production and deal a tremendous blow to efforts to rebuild U.S. cotton export markets."

Also in prospect, Mr. Blake pointed-
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WASHINGTON — An estimated 6,506,000 tons of nitrogen, phosphate and potash will be available for domestic fertilizer purposes in the fiscal year ending June 30, 1958, according to the Fertilizer Situation for 1957-1958, released last week by the U.S. Department of Agriculture. This total will be about 2% less than that estimated for 1956-57.

Supplies of the three plant food nutrients are expected to be adequate for domestic agricultural requirements as well as export demand, USDA said. The fertilizer industry has the greatest capacity in the history of the U.S. for producing all three nutrients.

Estimates of supplies of nutrients available for fertilizer purposes in 1957-58 are based on trends in movement of fertilizer materials during the first six months of the year, assuming that those trends will not change materially, USDA said.

★ Supplies of nitrogen for fertilizers are expected to total 2,400,000 tons of N in 1957-58, an increase of about 5% over the 1956-57 figure (Table 1).

★ Estimated supply of phosphate (P₂O₅) for fertilizer purposes is estimated at 2,235,000 tons (Table 2). USDA said that it is believed that the net quantity of P₂O₅ available for fertilizers in the U.S. this fiscal year will be 4.3% less than in 1956-57.

★ The supply of potash delivered to the domestic fertilizer trade during 1957-58 is expected to be 1,871,-
(Turn to FERTILIZER, page 20)

Purchases of Farm Equipment Hint at Better 1959 Sales

LOUISVILLE, KY.—In four important states, farmers have invested this year more than \$150 million through loans from the Federal Land Bank branch here, to buy additional tools and equipment for improved efficiency for their farm enterprises.

With virtually all farmer commitments for plant food for this year's crop already made, it is not too early to look to crop year 1959 and this record showing of farmer loans provides a base of optimism for the pest-icidal chemical and plant food industries for the year ahead.

This commitment by farmers is not only a sign of future optimism on their part, but it is a virtual order to the chemical industry to do its part by spurring adequate use of plant foods and protective chemicals so that this new machinery and equipment can pay off their owners in maximum efficiency.

This information concerning farmer display of confidence in the future comes from a responsible official of USDA who recently reviewed condi-
(Turn to PURCHASES, page 20)



Everett L. Midkiff, Jr.

BECOMES TREASURER—Everett L. Midkiff, Jr., has been named treasurer of Douglas Chemical Co. and its subsidiary corporation Desert Gold Food Co. His appointment became effective May 1, according to W. C. McCaslin, executive vice president of the parent firm. The new appointee has been associated with Douglas since December, 1956. He holds degrees in business administration and is a CPA. He makes his headquarters at Kansas City, where the home offices of Douglas Chemical Co. are located.

Nitroform Names Three To Key Executive Posts

WOONSOCKET, R. I.—Nitroform Agricultural Chemical Co., Inc., has announced the appointments of key personnel. Albert J. Puschin has been made executive president, Charles K. Mruk was appointed sectional agronomist in the Northeast, and Raymond E. "Dutch" Harman has been named as Mid-Atlantic sectional agronomist for the company.

Mr. Puschin is a graduate of the Massachusetts Institute of Technology and has been a successful chemical engineer and business administrator.

Mr. Mruk joined the firm last September, and was graduated from the University of Rhode Island in 1951.

Mr. Harman was an agricultural agent for 30 years and before that engaged in teaching, farm management, and participated in farm radio programs. He holds degrees from both Pennsylvania State and Rutgers.

G.L.F. to Encourage Production of More And Better Forages

ITHACA, N.Y.—A long-range plan to encourage the production and use of more and better forage by dairy farmers has been announced by Co-operative GLF Exchange, Ithaca.

The GLF "5-Star Forage Plan" will run for five years and will include some 400 field demonstrations on farms to show how to grow high-quality pasture and hay.

"The average cow in GLF territory—New York, New Jersey and northern Pennsylvania—produces less than 8,000 lb. milk," pointed out E. H. Fallon, GLF general manager. "Research by agriculture colleges and farm experience indicates that the production of the average cow can be increased 2,000 lb. year by providing all the high-quality forage she will eat."

The demonstrations will show the effect of proper use of lime and fertilizer, insect and weed control, the right forage variety and harvest timing and methods.

The farmer cooperative is also planning demonstrations showing equipment and methods of drying early-harvested hay. Milk production of cows fed this high-quality hay will be compared to production of cows fed ordinary hay.

"Research shows that the variety of forage is not as important as the stage of maturity when harvested, the weather and methods of curing and storing. Late cutting and weather damage cause the greatest losses of nutrients in hay crops," Mr. Fallon said.

"The more mature the hay when cut, the lower its feeding value, research projects have proved. Figures released by Cornell University indicate that hay cut June 1 contains 63% total digestible nutrients. By July 1, nutrients are reduced to only 50%."

"Cows also will eat more early-cut hay than late-cut. Hay, animal nutritionists point out, is the cheapest source of nutrients for dairy cows. As hay intake increases, cost of milk production is reduced."

Firm Buys Assets of Chicago Stockyards Compost

GERMANTOWN, WIS.—Purchase of the equipment, a trade name and other assets of the Chicago Stockyards Compost Co. has been announced by George T. Klein, presi-

dent of Dairy Organic Compost, Inc., here.

Mr. Klein made the purchase from William Wood Prince, sole owner of Chicago Stockyards Compost and also president of Armour & Co. The price was not disclosed. Chicago Compost's plant was not involved in the transaction. Mr. Klein said the acquisition would more than double his firm's production of organic soil conditioner.

Texas Weather Improves; Farmers Take Advantage

BIG SPRING, TEXAS—Unsettled weather throughout Texas has briefly calmed, and farmers are taking advantage of it. After being delayed by heavy rains, most farmers on the High Plains have finished planting cotton, with much of it already up to good stands. Thus far they have had enough moisture without irrigating.

In the blackland belt of East Texas farmers have been planting, replanting and attacking the lush crop of weeds. Wheat prospects in the northwest have increased because of showers, though in some areas various types of rust have reduced small grain yields.

Vegetable farmers in South Texas had some difficulty getting crops harvested because many Mexican Nationals were stopped from coming into the country. However, most farmers found other workers and are now shipping vegetables throughout Texas and other states.

Cotton in South Texas is later than usual, but is making good growth. Only in the arid Trans-Pecos region are conditions normal, and here irrigated cotton promises another big crop.

Ranages are the best in many years. Also for the first time some poisonous range plants are making an appearance. Some have been attacked by chemical sprays, while hand grubbing of bitterweed has been extensive in parts of the sheep country.

County agricultural agents and entomologists are telling farmers that a heavy insect infestation may be expected and that early season control measures should be started.

POTASH HELPFUL

LOS ANGELES, CAL.—A cure for "sleepy" carnations has been developed by University of California scientists here. Anton M. Kofranek and O. R. Lunt found that potash added to the plants' diet causes flowers to perk up and sell at a higher grade than those without potash.

Arkansas Approved Ratio-Grade List For 1958-59 Released

LITTLE ROCK, ARK.—A list of approved ratios and minimum grades of mixed fertilizer that may be sold in Arkansas during fiscal 1958-59 has been released following a public grade hearing held in May.

The list of approved ratios and grades is divided into two groups—recommended and not recommended. Henry DeSalvo, head of the Feed, Fertilizer and Pesticide Division of the Arkansas State Plant Board, said that "those in the 'not recommended' group, although on the approved list, are not as desirable agronomically and may be deleted in the future."

Ratios and grades on the recommended list are 0-1-1, 0-20-20; 0-1-2, 0-10-20; 0-2-1, 0-20-10; 0-2-3, 0-20-30; 1-1-1, 8-8-8; 1-1-2, 9-9-18; 1-2-1, 5-10-5; 1-2-2, 5-10-10; 1-4-4, 3-12-12; and 3-4-6, 6-8-12.

Ratios and grades on the not recommended list are 1-3-6, 3-9-18; 2-3-9, 6-9-27; 2-1-1, 14-7-7; and 2-1-2, 10-5-10.

Ammonium phosphates (16-20-0, 13-39-0, etc.) will be considered as materials and no ratio and grade restrictions shall be applicable, Mr. DeSalvo said.

Citrus Replant Area Treatment Successful

BERKELEY, CAL.—Citrus replant areas can be treated with the same chemical for control of nematodes and practical control of Phytophthora fungi, according to University of California scientists.

Richard C. Baines, plant nematologist, and T. S. DeWolfe, associate specialist in plant pathology, obtained excellent control of nematodes in the top four feet of soil after mixing Mylone, an organic compound, into the surface soil and adding six inches of water. Control also resulted when that material was applied in six to eight surface inches of water.

Weed control was also effective with the treatment, the Citrus Experiment Station scientists noted. They used the chemical at the rate of 400 lb. of active ingredient per acre. Sheet metal "dikes" four feet in diameter confined the water in areas treated. The chemical remains in a useful state in the soil for three or more days, the specialists said. This allows ample leeway for applying water.



Harry Rash



J. W. Clark



Orville Buerge



A. H. Bowers

NPFI PANEL MEMBERS—A panel discussion on "Changing Farmers' Fertilizer Practices" will be carried out by well-qualified speakers at the National Plant Food Institute's annual meeting at the Greenbrier Hotel, White Sulphur Springs, W. Va. Appearing on this portion of the afternoon program of June 17, will be: Harry Rash, president, First National Bank, Thayer, Kansas, whose topic is "The Banker's View"; J. W. Clark, county agricultural agent of Dane County, Wisconsin, who is slated to talk from the county agent's viewpoint; Orville Buerge, Buerge Bros., Harrisonville, Mo., who will

discuss the situation from the viewpoint of a farm dealer, and A. H. Bowers, Swift & Co., Chicago, who will act as moderator of the panel. This portion of the program follows an earlier discussion on "Changing Farmers' Attitudes Toward Fertilizer"; an address by Fred C. Scribner, Jr., Under-Secretary of the Treasury; a time-lapse motion picture, "Watching Fertilizer Work," by John Ott, Winnetka, Ill.; and a business session. John A. Miller, Louisville, Ky., president of the National Plant Food Institute, will preside at the convention sessions. The meeting will be held June 16-18.

Rate of Business Failures Slows Down

NEW YORK — Although business failures currently are climbing to new postwar peaks, according to a recent study of the business economics department of Dun & Bradstreet, Inc., the rise has slackened significantly. The increase amounted to 8% in 1957, compared to 16% between 1955 and 1956, and, in the first three months of 1958, amounted to 10%.

This study, which has just been published, covers business failures and resultant creditors' losses from 1920 through 1957. To round out the failure picture over this period, failures and creditors' losses are also analyzed by location, industry, age, size, and by cause.

Other highlights of the comprehensive study are as follows:

Related to the growing business population, the casualty rate remains considerably less severe than in 1939. Dun's Failure Index shows that 52 concerns failed in 1957 for every 10,000 listed in the Dun & Bradstreet Reference Book. This rate has edged up from 48 a year previous, but falls well below the 70 per 10,000 recorded in 1939.

Dollar liabilities involved in 1957's failures surged to \$615 million—another new peak for the postwar period. Casualties of medium size accounted for the sharp rise in losses. Neither very small casualties (those under \$5,000) nor exceptionally large ones (in excess of \$1 million) were as numerous as in the preceding year.

Businesses over 10 years old continued to represent a growing portion of total failure. They comprised 9% in 1947, but have edged up in each succeeding year, until they accounted for 19% of the total in 1957. Failures among enterprises in their first five years of operation are still large—60% of the 1957 casualties fell in this group.

In all functions of business, failures exceeded 1956 levels, but the rate of increase eased appreciably in every group except manufacturing. Construction and retail businesses continued to feel the brunt of the postwar uptrend in mortality, and wholesalers again showed the least year-to-year change. In retailing, totals climbed to record levels in four trades: furniture and furnishings stores, building materials dealers, the automotive group, and eating and drinking places.

Foods More Stable

On the other hand, fewer retailers in the food, general merchandise, apparel and drug lines failed in 1957 than in 1956.

Casualties among manufacturers increased at a slightly accelerated rate in 1957, lifting their total above their previous postwar high, established in 1949. Marked increases occurred in the lumber industry, transportation equipment, mining, stone, clay and glass, but totals dipped to the lowest point in four years or more in textiles and apparel, leather, iron and steel, and machinery.

Geographically, during 1957, failures climbed to postwar records in all regions except the Mountain states, which dipped from 1956, and the New England states which, despite an 8% increase, remained below their 1949 peak. The sharpest rises occurred in the West South Central and East South Central regions, which were buffeted by winds and floods in 1957. The East and West North Central states also suffered increases considerably above the national average. In Oregon, failures almost doubled, perhaps reflecting difficulties in the lumber industry. The Middle Atlantic states reported the least change for the year.

Failure statistics compiled by Dun & Bradstreet do not include all discontinuance of business. Reported failures include only those concerns involved in actions likely to end in losses to creditors.

Proposed Freight Rate Increase Ruled Out by Canadian Government

TORONTO—The Canadian government has overruled decisions of the Board of Transport Commissioners, and denied the railways the right to institute a 3.6% freight rate increase authorized by the board last December. At the same time it refused to let the Bell Telephone Co. institute increases in its rates, which were also authorized by the board. It is estimated that the decision will cost the railways \$15 million a year, and the telephone company \$10 million a year.

The board was set up in 1904, and since that time 59 board rulings have been appealed to the cabinet, but only three of its decisions were rejected outright. The last was in the 1920's dealing with the Crowsnest Pass grain rates.

At the end of last year the companies had asked for rate increases

sufficient to allow them to set up reserves of profits to meet future corporation tax levies. The cabinet gave as its reason for the almost unprecedented decisions:

"Amounts placed in tax equalization reserves should not be regarded as expenses for the purpose of rate-making policy because of the uncertainty as to whether and when such reserves will need to be drawn down for the payment of taxes in future years and the inequity of imposing upon ratepayers at this time the full cost of this distant and uncertain contingency."

Eight of the 10 provinces, Ontario and Quebec excluding themselves, protested against the proposed 3.6% increase in freight rates. Because of competition by Great Lakes shipping, Ontario and Quebec have never been so keenly interested in freight charges. On the other hand, the Bell Telephone Co. has a franchise to operate in these two provinces only, and a great number of municipalities pro-

tested the proposed increase in telephone rates.

The real reason for the cabinet's decision may be that it hoped to halt, or at least sternly discourage, the wage-price spiral which has attacked Canada's economy since the end of the 1939-45 war. In an address delivered to the Canadian Labor Congress in Winnipeg, John Diefenbaker, prime minister, intimated that the time had come for management and labor to hold the line on wage demands and price increases. He pointed out that Canada could not keep her people at work if she priced herself out of world markets.

The increases authorized by the board to the railways and the telephone company could not be considered excessive, but, nevertheless, they would have caused an upward movement of the inflationary spiral, and downward movement of the purchasing power of the Canadian dollar, something the government wishes to avoid, hence the decision on the freight rate and telephone increases.

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INSECT, PLANT DISEASE NOTES

Insect Activity Stepped Up in Colorado

FORT COLLINS, COL. — Warm spring weather has brought an increase of activity in the insect world. This is especially evident in the Arkansas Valley, according to recent reports of the Colorado insect detection committee at Colorado State University.

At Rocky Ford, light traps made first collections of the season for a number of insects, including sugar beet webworm, clover cutworm, army cutworm, black cutworm, alfalfa looper and white lined sphinx moth.

All counties report general infestations of the pea aphid, although the insect is not yet present in economic numbers.

In San Luis Valley, considerable numbers of alfalfa webworm moths have been taken in light traps. So far there have been no signs of the spotted alfalfa aphid or potato psyllid in the valley.

On the western slope, light trap collection at New Liberty in Mesa county showed limited numbers of moths of sugar beet webworm, alfalfa webworm, black cutworm and celery looper. Larval counts of the alfalfa weevil are as high as 200 per 100 sweeps in Mesa county. Garfield, Delta and Montrose counties report lesser numbers. Parasitism in Delta county is estimated at 50%.

A few codling moths have been taken at the Western Slope branch experiment station at Austin (Delta county), but by the middle of May, there had been none in the Eckert and Tongue Creek areas.

Collections from bait traps on the Eastern slope in Weld county show an increased number of corn root maggot adults. Only a few sugar beet root maggots, western wheat stem maggots and lesser bulb flies have been taken. There has been no sign of the onion maggot so far.

In Pike and Roosevelt National Forests, a spraying program is now under way to control the Black Hills beetle.



Scab Infects Orchards In Massachusetts

AMHERST, MASS. — Recent rains discharged most of the apple scab spores in old leaves on the ground, but enough are left so that protection of new growth is necessary during rains. This is no time to try to save a scab spray. If leaf scab is found, there is still time to use a protectant fungicide.

Growers should keep an eye out for apple powdery mildew, especially on terminals of Baldwin, Cortland and Rome. There is some around.

Brown rot blossom blight was found on peaches where sulfur spray was not applied on time during the rains in the bloom period. The fruit can be protected by including sulfur or glyodin in the insect sprays.

Professor Whitcomb reports a total of 90 or 20% of the expected number of curculio beetles from his test trees at Waltham. Heavy rains, of one inch or more, washed off spray deposits; fruit is enlarging rapidly, thus thinning out the spray covering. Heavy curculio damage can be done in just a few hours with temperatures above 75° F. Growers should keep a close watch on curculio activity in "hot spots" and maintain a good protective covering.

Many potatoes are up, and need

protection from flea beetles. Cutworms still reported more abundant and destructive than usual. Control measures should be carried out before seedlings emerge or plants are set. This spring is favorable to springtail. —E. H. Wheeler and C. J. Gilgut.



Indiana Reports Both Scab and Insects

VINCENNES, IND. — The second cover spray was being applied to apple orchards in this locality at the end of May. Apple scab is plentiful in a number of orchards where presence should be controlled at this time.

Rosy aphids are also still a problem in several places, and half-grown larvae of red-banded leaf roller of the first brood are present on sucker growth near the trunks of the trees in a few orchards. Thorough coverage of the inside of the leaves and the leaves near the center of the trees is needed to assure control of this pest.

Adult activity for spring brood moths of Oriental fruit moth is completed. European red mite populations in most orchards are very light and well controlled.

A few plum curculios are still present in commercial peach plantings and protection is still needed in this area. Populations in an abandoned orchard remain about the same as for the previous week; 109 adults were jarred from 5 peach trees May 26 as compared to 119 on May 19.

Codling moth eggs laid May 16 hatched May 25. Eggs laid May 20 to May 22 are now in the red ring stage. Entries in the orchards were expected to increase about May 30. Protective sprays will be needed for the next 20 days. It is estimated that 60% of the overwintering adults have emerged. —D. W. Hamilton.

Armyworms, Corn Borer Appear in Missouri

COLUMBIA, MO. — Some armyworms are still being found in the southern half of the state. Parasitism and disease are reducing the number of worms, but some spraying has been necessary. Continue to closely watch rank small grains and fescue and when an average of four or more worms per foot are found, spraying will be justified.

European corn borer egg laying has started in the southeastern counties, and should reach a peak during the coming week or 10 days. In the northern parts of the state, development will probably be somewhat slower.

In the southern counties, we are finding some cutworm injury, and it may extend into other sections of the state. Some alfalfa fields are loaded with variegated cutworms which are keeping new growth clipped back.

Chinch bugs are beginning to cause trouble in some western counties. Numbers are extremely high in some fields of small grain—especially barley and rye—and in some fields of seedling corn. These crops should be checked carefully. If the bugs are heavy in small grains, spray them now, before they have a chance to migrate into nearby corn or sorghum.

English grain aphids are increasing in numbers, but we have still not found fields where we thought controls were justified. In many fields, there will be an occasional head which is heavily loaded with aphids, but average counts over the field are still below that which justifies spraying.

While the grain is still in the milk stage, counts averaging 25 to 30 aphids per head will result in sufficient damage to make spraying nec-

essary. After the grain is in the dough, however, the injury drops off rapidly.

Cucumber beetles are causing considerable injury in commercial melons in the southeastern counties. —Stirling Kyd and George W. Thomas.

Canker, Curculio, Codling Moth in New Jersey

NEW BRUNSWICK, N. J. — Overwintering codling moth check revealed 80% emerged, 20% pupae in Burlington County on May 26. A few moths have been active for 10 days in South Jersey orchards. Top-off sprays are advisable in problem blocks.

Peach curculio activity will be dropping off from now on. Canker is really hitting again in southern counties. Both fall and spring infections now showing. Spring infection should be just about over for this year. Where an old, badly-cankered block of Jerseyland, Cardinal, or similar susceptible variety is surrounded by young trees, it will be best to pull the old block. The powdery mildew is showing on fruit of Goldeneast in Burlington County.

Strawberry mites have not been a problem yet due to heavy rains, but leaf spot and cap browning are severe. Infection so bad on some fruiting stems that berries are drying up.

Blueberry gray mold is worst on Weymouth, due to tight-cluster habit of flowers and fruit. Disease is worse in blocks with poor growth and winter injury.

Springtails continue to be numerous on many crops due to the damp season. Injury has been seen on cabbage, cucumber, eggplant and many crops, but most growers may not recognize these tiny pests as causing damage. —Spencer H. Davis, Jr., Leland G. Merrill, Jr. and William E. Collins.



Corn Borer Emergence Noted in Report

AMES, IOWA — European corn borer pupation in the central 1/3 of Iowa ranges from 90% to 100%. Emergence as determined by dissection of corn stalks in the field is 2% to 8%. Corn borer moth flight, as indicated by light traps, is increasing.

Dry weather has slowed corn growth. Corn planted at Ankeny April 25 measured 12-14 in. extended height by the end of May.

Corn flea beetle was brought in from Van Buren Co., not numerous enough to warrant treatment. Damage at tips of leaves was due to wind and blown sand.

Sod webworm infestations worth spraying showed up in first year corn in Story and Union Counties. In an early planted field in Dallas County 1 sod webworm per 10 hills was seen. Widespread use of soil insecticides at or before corn planting has greatly reduced the number of such infestations.

12-spotted cucumber beetles are chewing on corn leaves. They lay their eggs in fields planted to corn. Larvae feed on the corn roots. Six-spotted leafhoppers are beginning to appear in corn in south central Iowa. These leafhoppers may become very abundant on corn, but they do not seem to damage the plants.

A very few young army worms

(3/4 to 1/2 in. long) were seen in oats in Adair, Dallas and Madison Counties. Army worm moths have been flying in Iowa for 3 weeks or more. They prefer to lay their eggs in rank, lodged small grain or grass. Chewed leaf edges on these crops should lead to examination of the ground surface for army worms that hide there during the day. If abundant (5-10 per sq. ft.) the worms could migrate to corn.

Bluegrass mirids averaged 10 per sweep in bluegrass in the southern 1/2 of Iowa. These light greenish-gray sucking insects with white stripe on each side of the body attack the stems of developing bluegrass heads and are associated with "silver tip" of bluegrass. —Harold Gunderson.



Virginia Reports More Armyworms in State

BLACKSBURG, VA. — Armyworms are beginning to show up in some areas of Virginia, and farmers are advised to be on the lookout for this pest. Virginia Polytechnic Institute entomologists say outbreaks are expected in some fields of small grain, corn, and grass crops, and although the outbreaks likely will not be general, it's a good idea to watch for them.

Alfalfa weevil damage is largely over for the year. However, some reinfestations will take place after the first cutting. The entomologists say if the first cutting was not treated, the spraying of the stubble after the hay has been taken off is justified only when the larvae are so numerous that they can be seen without searching for them, or if about 50% of the new growth shows damage.

Insect Infestation Threatens in Kansas

MANHATTAN, KANSAS — Serious grasshopper and chinch bug threats have been found by two Kansas State College entomologists in surveys over the state.

The grasshopper hatch has started in all areas of Kansas. Fields of small late spring barley have been plowed up in some of eastern Kansas because of chinch bugs, report Dell E. Gates and David L. Matthew, entomologists.

Counts of grasshoppers along wheat fields in southwest Kansas were as high as 1,500 to the square yard. This number of 'hoppers could take border rows of grain sorghum when plants emerge. Alfalfa and vegetable crops will receive heavy damage by midsummer unless the heavy populations are sprayed.



Armyworm Damaging Crops in Illinois

URBANA, ILL. — Armyworm is now present in small grains and grasses in sections of western and southern Illinois. Largest populations can be found in heavy growths of winter barley, where they range from moderate numbers to as many as 20 per linear foot of drill row. As many as 5 per linear foot have been observed even in light, thin stands. Luxuriant growths of wheat are also infested, but not quite so severely as the barley fields. Other dense stands of grasses may also be infested. The worms are still small, but with favorable weather they will develop rapidly and damage may be expected in these fields during the next few weeks.

With this potential threat, farm-

ers with heavy, luxuriant stands of wheat and barley should immediately check their fields and act before damage is done. Armyworms feed at night and hide during the day at the base of the plant under clods and debris. Therefore, thorough examination is necessary to find them. Moderate to heavy flights of armyworm moths have also been noted in northern Illinois during this past week.

In areas where moisture is about normal, corn borers are developing normally but are still several days later than last year. Slight moth emergence has been reported in southern Illinois, but corn here is late and borer populations are low, so no problem is anticipated. In central Illinois pupation is approaching 50% and is about a week later than last year. In the drier areas, particularly in northern Illinois, some borer pupation has been recorded and is considerably later than last year. Pupation in these areas will likely be delayed until old cornstalks containing borers become moist.

In the northern half of Illinois, corn growth is one week to ten days earlier than in 1957. Considering the possibility of later emergence of borers and the advanced condition of the crop, borers will likely increase and damage may be higher than last year.

Flea beetle is still abundant on corn in western and southern Illinois. With present moisture and temperature, corn should rapidly grow away from all but the extremely severe damage.

Spotted infestations of wireworms, billbugs, sod webworms, and cutworms are still being reported on small corn.—H. B. Petty.



Oriental Fruitflies Found In Washington Orchards

SUNNYSIDE, WASH. — Infestations of Oriental fruit flies have been reported in the orchard areas near here. Orchardists say the fruit flies appeared at a later date this year because cool spring nights prevented flights of the moths.

State college entomologists also report that the state's valuable pea crop is being threatened by pea aphid and pea weevil. Infestations of this pest are the heaviest in the Yakima valley for many years, and also heavy near the Snake River in Whitman County.

The Colorado potato beetle may infest the state of Washington this year, also, the extension service has warned. Clusters of eggs have been reported as abundant in the Columbia basin irrigation project in Central Washington and the truck farm area near Yakima.

Pea Aphid Threatens Eastern Oregon Fields

UMATILLA, ORE. — Heavy infestations of aphids in pea fields of eastern Oregon, particularly in northern Umatilla County, are reported and spray operators have gone to war against the aphids as weather becomes favorable for spraying operations.

A county official said the aphids are "about as bad as I have seen them," particularly in the Spofford country around Milton-Freewater.

Alfalfa Weevil Hits Fields in Georgia

ATHENS, GA. — Alfalfa weevil is infesting second growth alfalfa at 75/100 sweeps in Oglethorpe County; 15/100 sweeps in Wilkes County and 10/100 sweeps in McDuffie County.

Light infestations on alfalfa in Spalding County.

Moderate to heavy infestations of billbug in corn in Washington, Webster and Coffee Counties.

Moderate to heavy infestations of thrips on peanuts in Bulloch, Can-



dler, Tattnall, Appling, Bacon, Coffee, Irwin, Tift, Cook, Colquitt, Worth, Crisp and Dooly Counties.

Red-necked peanutworm in light to moderate infestations on peanuts in Bulloch, Candler, Tattnall, Appling, Bacon, Coffee, Irwin, Tift, Cook, Colquitt, Worth, Crisp and Dooly Counties.

Tomato fruitworm are in light infestation on tomatoes in Tattnall, Coffee, Irwin, Tift, Cook and Colquitt Counties. Light infestations of corn earworm on corn in Tattnall County.

Corn Damaged by Pests In Wisconsin Report

MADISON, WIS. — Cutworm damage to field corn and other plants continues to be reported and much (if not all) of the replanting of corn has occurred where there were early plantings on spring-plowed sod.

An abnormally heavy population of a scale insect (presumably the European fruit lecanium) has developed in several localities. Observations, specimens and reports to date include the counties of Dane, Sauk, Washington and Milwaukee. Trees and shrubs affected include elm, basswood, several apple varieties, plum, cherry, maple and mock orange. Scales most noticeable are the females and most of these have completed egg laying.

In corn fields, examinations of the sprouting kernels and small plants may show that there is damage other than cutworm damage. This damage may be

due to wireworms or seed-corn maggots which are favored by retarded germination. Treatments to avoid these losses should have been made earlier.

About 80% of the European corn borer, *Pyrausta nubilalis*, was in the pupal stage in one Sauk county location on light soil on May 27. Pupation, if not already under way on heavier southern county soils, will begin soon as well as in counties to the north. It appears that the forthcoming first brood of borers may not be as well synchronized with corn growth in Wisconsin as in Iowa or Illinois.

Small numbers of grasshopper nymphs in the 1st and 3rd instar on light soil in Adams county were identified as the two-striped grasshopper, *Melanoplus bivittatus*, the migratory grasshopper, *Melanoplus bilituratus*, and the green-legged grasshopper.

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VIEWPOINT . . .

Enzymes May Tell Story of Plant Hunger More Clearly Than Can Other Procedures

By Dr. Vincent Sauchelli
Chemical Technologist
National Plant Food Institute
Washington, D.C.

Plants and animals may be inferior in quality long before hunger signs of deficiencies or excesses are evident. That comment was made by



Dr. Sauchelli

Dr. William D. McElroy, director of the McCollum-Pratt Institute of the Johns Hopkins University, Baltimore, Md., in a lecture before the National Academy of Sciences earlier this year. He also made other statements of interest to the fertilizer industry, as indicated in the following:

Dr. McElroy and his staff at McCollum-Pratt are dedicated to the investigation of trace elements in biology and agriculture. Some novel findings about the function of trace elements in these branches of science were described in the lecture. Since these elements play an important, but as yet not fully understood, role in the lives of all created things, we may expect new developments from research projects at this Institute.

Foods and nutrients are needed for growth by the cells of every organism. Their function is to generate and release energy, build and repair cell tissues and regulate the machinery of metabolism. Because trace elements are needed in small amounts, scientists believe they function primarily as catalysts and most often they do this as a part of an enzyme system. They act therefore somewhat like vitamins which are organic micro-nutrients, whereas the trace elements we talk about are inorganic. Deficiencies and excesses of nutrient elements are a matter of degree.

In his talk, Dr. McElroy emphasized that the visual symptom of a deficiency, popularly called a "hunger sign," may show up long after the plant may actually have suffered a deficiency and become inferior in quality. Furthermore, yield and growth measurements cannot be considered adequate as manifestations of a normal, healthy organism. The real, significant test for such a status has to be found in the enzyme patterns. There is the heart of the true test. If the diagnosis of plant and animal diseases—deficiencies—is to be of value it should be made early and on the enzyme systems of the organism. Studies of growth and yield will not give the answer.

Biochemists are now concerned more with explaining how trace elements behave in enzyme systems than with whether this or that trace element is essential in nutrition. This derives from evidence that growth or yield measurements are not adequate criteria by which to determine whether the various systems of metabolism are properly functioning for normal health.

Dr. McElroy posed the question: "Can we apply trace elements and other fertilizer nutrients to the soil and in the diets of animals to the point where we get a maximum crop yield or growth rate and be satisfied

we are giving that organism the highest nutritional benefit?" Several excellent examples cited indicated that the answer is NO. And the examples cannot be considered extreme and special cases.

Visual "hunger signs" of nutritional deficiency or excess in plant and animal don't have to be present to prove actual deficiencies in the health and vigor of the organism. The speaker said that what seems clear from their studies is that for each level of trace-element supply during growth a characteristic enzymatic pattern appears without regard to the yield. The enzymatic pattern is the real test. Enzyme patterns keep changing under each level of trace element nutrition and such changes, when understood, are most valuable to the diagnostician. Growth studies cannot possibly give such information.

The lecture as a whole was of necessity highly technical and scientific considering the place and audience. Perhaps, to illustrate the phase which was noted above, the following brief report from the North Carolina Experiment Station may be pertinent (1). It shows that trace elements can affect the plant's use of oxygen. It is known that plants use oxygen constantly to burn up sugars and fats for energy.

Recent tests with tomatoes reveal the influence of trace elements—iron and copper—on enzyme activity. Iron deficiency reduced by half the enzyme activity in the roots; copper deficiency reduced enzyme activity in the roots by 75% and in the leaves by about 88%. When both elements were deficient the enzyme activity was still further reduced. These studies are adding new knowledge of how mineral elements affect the use of oxygen by plants and constitute a new basis for the more efficient use of fertilizer materials.

(1) N.C. Research & Farming. Winter 1955. Page 8.

Less Corn Put Under Supports This Year

WASHINGTON—Through April 15, producers had put some 302 million bushels of 1957-crop corn under price support, the U.S. Department of Agriculture reported this week. This included 262 million farm-stored, more than 21 million warehouse-stored and more than 18 million bushels under purchase agreements.

A year earlier, producers had put 398 million bushels of 1956-crop corn under support.

The final date for putting 1957 crops under support is now past, except for corn, which is May 31.

Of the corn put under support, about 40% came from farmers not in compliance with acreage allotments.

RESEARCH CENTER

BERKELEY, CAL.—Establishment of a wild lands research center in the University of California's statewide Agricultural Experiment Station was announced recently by Robert G. Sproul, university president. Planned as the headquarters for a wide array of university research projects, the new center will help focus more attention from science upon the problems of California's "big back yard"—the 65 million acres of resource-rich wild lands that make up almost two thirds of the state's land area. Appointed to direct the center is Henry J. Vaux, dean of the university's School of Forestry at Berkeley.

Texas Farmers Lose Bet In Not Using Fertilizer

PLAINVIEW, TEXAS—Taking a series of fertilization tests at the High Plains as an example, the Grain Sorghum Producers Assn. states that farmers in Hale County could increase their gross returns by nearly five million dollars annually. To do this, they would need to apply the optimum amount of nitrogen to the county's 300,000 acre grain sorghum crop.

The station has found that 120 lb. nitrogen an acre increased hybrid sorghum yields from 3,945 to 5,911 lb. Even 66 lb. an acre will increase the per-acre yield by as much as 1,200 lb., it is stated.

Only about half the farmers applied as much as 66 lb. an acre, while the other 150,000 acres received no nitrogen at all. This is based on an estimate by Ollie Line, County Agricultural Agent, and several fertilizer dealers.

To arrive at the nearly five million dollars lost through failure to use fertilizer, the Grain Sorghum Producers Assn. base its figures on the price of fertilizer and grain last year. Farmers received an average of \$1.65 a hundred for grain. Where the farmer used his own applicator, the cost of nitrogen was 6¢ lb.

Thus by putting down 120 lb. nitrogen for a cost of \$7.20 an acre and receiving \$32.44 extra from sale of increased grain, the farmer would have upped his net return by over \$25 an acre.

Spray Thinning of Apples Gets Results In California Tests

SACRAMENTO—Spray thinning of apples with a hormone may soon be an accepted commercial practice in the foothill orchard area near here, according to Richard Bethell, El Dorado county farm advisor.

Growers who have permitted tests to be conducted in their orchards during the past four years are unanimously enthusiastic about the results, Mr. Bethell said. They have found that the hormone spray eliminates enough tiny apples so that alternate bearing—too little crop one year and too big the next—in such varieties

as Golden Delicious is no longer a problem.

A test area on the Paul Driver ranch is typical. After four years, trees given the usual hand thinning treatment averaged just under 20 boxes of fruit per tree while those in the next row in which spray thinning, halted alternate bearing averaged 26 and a half boxes.

Another grower, Harold Brock, Camino, reported that spray thinning last year resulted in better size and color of the crop on his 20 acres of Golden and Red Delicious.

D. C. Alderman, University of California agricultural extension service specialist, said that naphthylacetamide, the material generally used for spray thinning, works by encouraging growth. It puts on more little fruits temporarily and this accentuates the tree's tendency to self thinning and all but the biggest and most vigorous fruits drop off.

Mr. Brock said that spray thinning as compared with hand thinning was more economical. He said a tree could be thinned with spray in about ten minutes while hand thinning required an hour to an hour and a half. Mr. Bethell estimated that spray thinning with naphthylacetamide should cost between \$25 and \$35 per acre.

Ohio Lime Plant To Cease Operations

TOLEDO—Basic, Inc., operator of the lime plant which is the only industry in Clay Center, has notified its workers that it will cease operations there. The company issued this statement:

"Building-lime products formerly made at Basic's White Rock plant (Clay Center) will now be produced at Gibsonburg, Ohio, under the improved manufacturing methods afforded by new facilities."

TREASURER NAMED

NEW YORK—Joseph J. Laputka was appointed treasurer of Escambia Chemical Corp. at the regular meeting of its board of directors on May 27. R. U. Haslanger, president, has announced. Mr. Laputka joined Escambia last year as assistant treasurer. Escambia produces ammonia, nitric acid, ammonium nitrate and ammonium nitrate solutions.



OBSERVES 35th ANNIVERSARY—Florida East Coast Fertilizer Co., Homestead, Fla., is observing its 35th year of operation in 1958. The firm was founded on May 22, 1923, and has made steady progress since that time.

Florida Firm Observes 35th Year of Operation

HOMESTEAD, FLA. — Florida East Coast Fertilizer Co., South Florida's oldest fertilizer manufacturing plant, is celebrating 1958 as its 35th business anniversary year. It was incorporated on May 22, 1923.

H. C. Bardsley, sales manager, says that his firm "may even be the oldest manufacturing company in Dade (Metropolitan Miami) County."

Modern in mechanization and technique, the plant has a capacity for

The plant, shown above, has a capacity for mixing and bagging 30 tons mixed fertilizer an hour and carries an inventory of materials permitting the formulation of some 500 different grades.

mixing and bagging 30 tons mixed fertilizer an hour.

Its varied inventory of fertilizer components permits plant production of more than 500 different fertilizer formulas on short notice. Although the plant is located in the Homestead area of Metropolitan Miami—some 30 miles distant, Mr. Bardsley says that railroad freight enables shipment of rail carloads of mixed fertilizer along dockside in Miami proper at a competitive price. Vocationally, plant personnel, trained in agriculture, qualify FEC Fertilizer to give specialized technical advice to farmers and other customers.

Stauffer Steps Up Production of Eptam

NEW YORK — Stauffer Chemical Co. has announced that the name of its selective herbicide, EPTC, has been changed to "Eptam." It has also stated that production of the product is being stepped up. The company says that production is being scaled up in a new and larger pilot unit so that output will provide an adequate supply for further testing and development.

The herbicide, ethyl di-N-propylthiolcarbamate, was developed in Stauffer's laboratories in 1955 and during the past two years has been undergoing tests in both greenhouses and in the field.

Oregon Sales Increase In First Quarter

PORTLAND, ORE.—Oregon fertilizer sales rose 7% during the first quarter of 1958, reports J. D. Patterson, chief chemist for the State Department of Agriculture. More than 57,000 tons of fertilizers were sold during the first three months of 1958, as compared with 53,725 tons sold during the same time in 1957.

A 16% decrease was recorded in the sale of agricultural minerals, however. In the first quarter in 1957 a total of 7,985 tons of gypsum, soil sulfur, borax and other minerals were sold. The total for the same period this year was 6,702 tons.

Western Canada's Drouth Conditions Continue

WINNIPEG — Drouth conditions continue over a very large section of western Canada with the area extending daily. Rains are urgently needed. The drouth extends over all of Manitoba, eastern and southern Saskatchewan. Seeding, except for flax, is practically completed, and there are many indications of uneven germination.

Only beneficial rains will induce farmers to resume seeding flax.

The outlook in Alberta, however, is brighter than in the other two provinces, but the west as a whole presents a very patchy crop picture. Stands that were cut off by the severe dust storms show definite deterioration, while other stands are showing surprising resistance to the drouth conditions. Even a brief period of heat without adequate rainfall would quickly extend deterioration over wider areas.

While weeds are growing slowly, they appear to be making better progress than crops. Grasshoppers are hatching across southern Manitoba and Saskatchewan and there are local reports of cutworm, wireworm and sweet clover weevil damage.

Hay crops generally will be poor and in many areas yield insufficient feed for livestock. Pastures are equally poor. Government agricultural officials are urging farmers to give serious consideration to supplemental hay and pasture crops and are stressing annuals that can be sown late in the season and still provide additional hay and pasture.

William Roeschen Joins Highway Equipment Co.

CEDAR RAPIDS, IOWA—Appointment of William Roeschen as chief engineer of Highway Equipment Co. has been announced by A. F. Clauss, vice president and general manager. Before joining Highway Equipment Co., Mr. Roeschen was sales engineer for Arrow Manufacturing Co., Denver.

During the past 25 years, he has served as senior manufacturers' estimator, plant superintendent and chief industrial engineer for leading industrial machinery manufacturing firms. In 1937 he received his mechanical engineering degree from Drexel University.



Maurice H. Lockwood

Maurice H. Lockwood Resigns Post as IMC Vice President

CHICAGO—Maurice H. Lockwood, vice president of the Plant Food Division, International Minerals & Chemical Corp., Chicago, resigned effective June 1. He has held that position since joining International



John D. Zigler

in 1948. Prior to that, he had served two years as the first full-time president of the National Fertilizer Assn.

A native of New Britain, Conn., he was with the Eastern Farmers Exchange from 1924 to 1946 and was in the management of its Fertilizer Division.

John D. Zigler, who has had 25 years of service with International, will head the Plant Food Division as general manager.

Early Spraying Urged For Better Insect Control

LUBBOCK, TEXAS — Farmers on the High Plains are being urged to practice something that many of them have neglected in former years . . . early insect control on cotton crops.

The Plains Cotton Growers Assn., in cooperation with area entomologists, have issued a pamphlet on the kind of insects usually prevalent and the proper methods for controlling them.

Early fruiting of cotton may be speeded up if cutworms, army worms, careless weed webworms, flea beetles and grasshoppers are controlled.

Other insects such as thrips, aphids, and red spiders often attack cotton soon after emergence. These groups should be controlled so the plants will fruit out early. Too often farmers have allowed these insects to go unchecked, and as a result the cotton stalks will be fruited at the top but almost bare of bolls in the lower part.

Farmers have done a good job in controlling boll worms, cabbage loopers and insects that attack later in the season. But only the last year or so have they begun to realize the damage done by the early insects.

Georgia Farmers Get Big Benefit from High Analysis Recommendations

ATHENS, GA.—Benefits to Georgia farmers who adopt new recommendations in fertilization have been emphasized by R. L. Wehnt and P. J. Bergeaux, soils and fertilizer agronomists for the agricultural extension service, University of Georgia College of Agriculture.

By shifting from low analysis to high analysis fertilizers, the agronomists estimate, Georgia farmers saved \$700,000 in 1957 alone. Such savings result from the fact that the high analysis fertilizers provide plant nutrients at a much lower cost, they explained. In 1957, Georgia farmers used 94,074 more tons of high analy-

sis fertilizers and 87,855 less tons of low analysis fertilizers than in 1956, they added.

When 1957 figures are compared with those of 1945, the saving to farmers is even more impressive—an estimated one and a half million dollars, they said. In 1957, only 217,000 tons of low analysis fertilizers such as 6-8-6, 4-8-8, 4-8-6 and 3-9-6 were used compared to 421,000 tons in 1945—a decrease of 204,000 tons.

Georgia's most popular fertilizer today, 4-12-12, of which 608,413 tons were used in 1957, was unknown in 1945. On the other hand, Georgia farmers used 87,899 tons of 3-9-6 in 1945 compared to only 517 tons in 1957.

Another fertilizer that is rapidly gaining favor with Georgia farmers, according to the agronomists, is 5-10-15. Only about 2,892 tons of this fertilizer, designed to overcome low potash soil conditions, were used in 1956. In 1957, use of 5-10-15 increased to 9,873 tons, about 240% over 1956. Since many Georgia soils are critically low in potash, increased use of 5-10-15 is expected to continue.

Davison Expands Its Technical Services

BALTIMORE, MD.—Chemical technical service activities of the Davison Chemical Co., division of W. R. Grace & Co., have been consolidated under F. Emerson Ivey, Jr., as manager, to provide better coordination and exchange of technical information and widened technical service. Mr. Ivey reports directly to R. D. Goodall, vice president and general manager of chemicals. Previously technical service men reported to product sales managers.

Mr. Ivey, formerly in charge of petroleum catalysts technical service, came to Davison in 1948 from Gulf Oil Corp. He is a chemical engineering graduate of Lehigh University.

Another Davison move in the same area is the appointment of Michael M. Dexter to work with J. N. Pryor in the division's technical service laboratory at Curtis Bay (Baltimore).

Industry Patents and Trademarks

2,836,532

Nematode Control. Patent issued May 27, 1958, to Eli Seifter, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. The method of controlling nematodes which comprises subjecting said nematodes to a toxic quantity of a nematocidal composition comprising as the essential active ingredient, sodium trithiocarbonate.

2,836,533

Nematocide. Patent issued May 27, 1958, to Eli Seifter, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. The method of controlling nematodes which comprises exposing said nematodes to a toxic quantity of a nematocidal composition comprising as the essential active ingredient an alkaline tetrathio-peroxycarbonate salt.

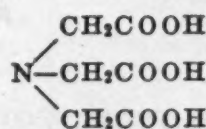
2,836,536

Fungicidal Compositions Containing 1, 4-Dibromo-2-Butyne and Methods of Destroying Fungi. Patent issued May 27, 1958, to Lloyd J. Meuli, Long Beach, Cal., assignor to the Dow Chemical Co., Midland, Mich. An agronomical practice which comprises impregnating fungus infected soil with a fungicidal amount of 1,4-dibromo-2-butyne and thereafter planting the treated soil.

2,836,537

Method of Treating Plants to Protect Against Rust. Patent issued May 27, 1958, to Joseph B. Skaptason, Wedeford, Pa., assignor to Pittsburgh Coke & Chemical Co., Pittsburgh, Pa. A method of treating cereal grain plants to protect them against rust comprising applying to the plant a metal salt of an amino-carboxylic acid selected from the

group consisting of ethylene diamine tetra-acetic acid, hydroxyethyl ethy-



lene diamine triacetic acid, cyanomethyl ethylene diamine triacetic acid, 1,2-cyclohexane diamine N,N,N',N' tetra-acetic acid, diethylene triamine penta-acetic acid and triethylene tetramine hexa-acetic acid, the metal being selected from the group consisting of iron, copper, zinc, magnesium, aluminum, sodium, potassium, manganese, nickel, lead, cobalt, barium and calcium.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Rectangular Design, with words "West Chemical Products, Inc.," for insecticides and other sanitary chemicals. Filed May 10, 1957, by West Chemical Products Co., Inc., Long Island, N.Y. First use March 13, 1957.

RSC in capital letters, for fertilizers, plant foods, and soil conditioners. Filed July 1, 1957, by Reynolds Soil Development Corp. (of Chuckawalla Valley) Monrovia, Cal. First use March 15, 1957.

Triple Tonic, in capital letters, for lawn treating and fertilizing material. Filed Oct. 21, 1957, by Northrup King & Co., Minneapolis, Minn. First use in January, 1957.

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NEW TECHNIQUES IN SALESMAN RECRUITMENT AND SELECTION

By Simon Heemstra

McMillen Feed Mills, Ft. Wayne, Ind.

EDITOR'S NOTE: Management personnel, whether at the retail, distribution or manufacturing level, are continually faced with the task of upgrading the quality and training of salesmen. This article details the main procedures used by Mr. Heemstra's company, McMillen Feed Mills, Ft. Wayne, Ind., in selecting and hiring salesmen. The article will provide helpful information to persons assigned the responsibility for this important phase of management. Mr. Heemstra is responsible for sales personnel procurement in his company, along with other duties, including on-the-job sales training.

Perhaps we should first ask ourselves, "How important is this matter of recruiting and selecting salesmen?"

First of all, it is important because the salesman is a very vital factor in our business economy. If our business is to be successful and profitable, we must have productive salesmen. Consequently procuring new salesmen who have the potential qualifications for becoming highly productive salesmen is a profitable investment.

In the second place, it is important because we are committing ourselves to a sizeable investment. How much of an investment does a new salesman represent?

Today, many companies prefer to hire young salesmen, men 25 to 30 years old. Such men have a potential of 30 to 35 productive years. Allowing for normal mortality of the men hired, a new salesman today represents an investment of \$300,000 to \$400,000 or more over the years, considering his earnings and expenses.

If any company planned to make an investment of \$300,000 to \$400,000 in real estate or a plant, that company would consult with experts in engineering, building, financing, etc. Yet, usually we commit ourselves to this very sizeable investment in a new salesman without giving it proper consideration of following a proved procedure for selecting the man.

Costs Involved

A third important factor in recruiting and hiring good salesmen is its cost. Consider what effect unproductive salesmen have on a company's earnings. We all know of companies whose sales volume and profits have been lessened because of poor salesmen.

Then there is the element of expense involved in putting a man on the payroll and training him. A recent report from Trade Ways, Inc., indicated the cost to the firm of hiring a salesman was \$5,249. An article in the Wall Street Journal substantiated these figures. And a recent study by the American Management Assn. revealed that the cost of hiring, training and losing an effective salesman was \$6,594. The cost, therefore, of losing salesmen who fail can run into many thousands of dollars per year.

It was a study of this kind some

10 years ago that compelled us at McMillen Feed Mills to take a good look at our own recruiting and selection procedure. We found that during a period of 14 months we had employed and discharged 22 men. We had hired 22 men and had discharged the same 22 men within that period. At that time, this was out of a total sales force of about 80 salesmen. The tangible cost of these 22 men was in excess of \$100,000.

We were guided in our approach to adopting a better recruiting and selection procedure by two factors:

1. Determining the kind of man we want on our sales force.
2. Selecting the man who qualifies under the standards we set.

KIND OF MAN NEEDED: Our first step in determining the kind of man we wanted was to analyze our

successful men. We took into consideration basic factors involved in their work, such as the type of dealer organization we had, what functions our salesmen had to perform, what supervision and training they received and how they were compensated.

With all this in mind, we have premised our selection of a man on the supposition that he had to have an agricultural background or training, or considerable sales experience, preferably in agricultural lines.

The results of the study may be surprising. We discovered there was no correlation between an agricultural background, training, previous sales experience and success as a salesman.

This, however, was in the late forties and early fifties. A study today

would show that conditions have changed considerably since 1950. To be productive today, salesmen need to be better informed with technical know-how and they must be more skilled in merchandising and sales techniques. As a result, our standards for the kind of salesmen needed are now much higher than a half dozen years ago.

As we took a good look at the changed situation in 1954 to determine what requirements this salesman had to meet, we asked ourselves this question, "Just what is the selling job this salesman has to do?" It is easy to give too loose an interpretation of what this selling job is.

When we look at selling we recognize two types in our distribution system:

The first may be termed non-creative—store clerks and route men who do little actual selling, but "wait on trade."

The second may be termed creative selling, often against resistance.

In creative selling a salesman faces a resistance by the prospect because he is asking him to change his buying and/or doing habits. The salesman has to be persuasive as well as resourceful. Our experience has been unsatisfactory in hiring salesmen who have been successful in the field of non-creative selling, but who have not proved themselves previously in creative selling.

Qualifications Desired

Here are a few traits and qualifications desired in the kind of salesman needed in our business.

1. He must inspire confidence. To do this he must have an acceptable appearance and a sincere personality. He must be intelligent. He needs a good education. He must desire to continue to improve himself through study.

2. A salesman must be persuasive. He must be able to influence and direct the behavior of others.

3. He must be energetic and enthusiastic. He should reflect leadership and ability to work with others. He must be a good worker and must enjoy competitive activity.

4. He must be able to speak well in private conference and in public. He must be able to think fast and analytically.

5. He must be self-reliant because he is working alone much of the time.

6. He needs good health. It is highly desirable that he and members of his family are in good health.

7. He must have the proper family situation to have the kind of cooperation from his family that spells success.

8. Most important, a salesman must be mature. He must be realistic, must use good judgment and must be dependable.

These traits, in general, are the ones that should be looked for in an applicant in our business. As you can readily see, these traits fall into two general classifications: (1) what the salesman will do, and (2) what he can do.

TECHNIQUES OF RECRUITMENT AND SELECTION: What techniques of recruitment and selection do we use and have we found successful? We propose to describe our procedure under two general headings.

A. Who does the job of recruiting and selecting?

B. How is it done?

In our company, both line men and sales staff members share in recruiting and selecting. Our sales

(Turn to RECRUITMENT, page 12)

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor



One of the sales problems which confronts many dealers is that of seasonal peaks. It is highly desirable that the dealer be able to make a profit every month, not just five, six or seven months of the year.

A firm which has solved the seasonal aspect of sales with the addition of related lines is the Leesburg (Va.) Grain & Feed Co., a division of Herbert Bryant, Inc., Alexandria, Va. The Bryant company has 12 stores and mills in Virginia and nearby states.

The Leesburg plant is managed by enterprising Earl Frith who works on a salary and commission basis. In checking on the Leesburg business for the past year Mr. Frith came up with a report as follows:

Fertilizer and Feed	\$75,000
Wheat sales	15,000
Corn sales	10,000
Implements	25,000
Hay, straw, farm supply.	35,000

"Because we have a number of closely related lines we managed to

keep busy all year," states Mr. Frith. "We had no so-called slump periods. When one line slowed down, there was always another line ready to take up the slack. We always felt we had something current to sell to farmers."

In addition to the traffic which feed and grain bring in, fertilizers in dry and liquid form attract many farmers in the spring and fall especially. Two applicators for liquid fertilizer application are in good demand in the peak seasons. Sprays and other farm chemicals are profitable items during late spring and summer.

Mr. Frith explains that the same tanks can be used for transporting and applying sprays as are used for transporting and spraying liquid fertilizer. However, many farmers in the area have their own sprayers. In that event the Leesburg Grain & Feed Co. sells only the materials to farmers.

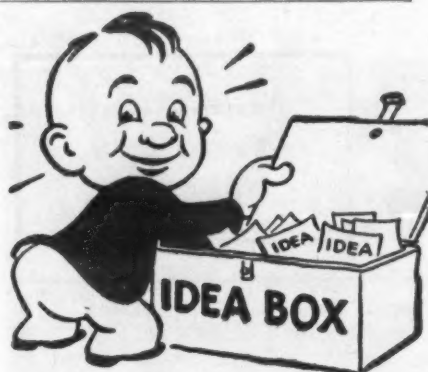
The firm has storage capacity for 25,000 bu. of grain and sells a lot of grain in this grain deficiency area. Hay and straw are also sold in relatively large quantities.

"We'll deliver, if a farmer desires such service, but a great many of them come in and pick up their own supplies. We do have one salesman in the field who solicits orders for

(Turn to OVER THE COUNTER, page 13)



SALES TALK—A sales discussion between Earl Frith (left), manager, Leesburg (Va.) Grain & Feed Co., and a customer is taking place here. Among the lines handled by the firm is liquid fertilizer, one of the products which helps even out seasonal sales peaks.



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6751—Swivel Connectors

For setting spray nozzles to any desired angle in row crop spraying, the Spraying Systems Co. has introduced a new line of lightweight, double and single swivel connectors for mounting to drop pipe ends. Connector bodies are adjusted to any point in a 360° range and are held in position by lock nuts. They are supplied in two sizes as No. 7205 for use with

1/2 in. drop pipes and 1/4 in. inlet connection Tee Jet spray nozzles—and No. 7450 for use with 1/4 in. drop pipes and 1/4 in. inlet connection Tee Jet spray nozzles. For complete information check No. 6751 on the coupon and mail it to Croplife.

No. 6750—Drum Literature

Vulcan Containers Inc. has prepared two pamphlets describing specifications of drums recently added to its expanded product line. One of the pamphlets reviews the advantages of the 55-gal. tight head "Uni-Drums" which interlock because of slightly offset rolling hoops. The other pamphlet explains the uses and describes the accessories for open and tight head 55-gal. drums, the single and double blade 55-gal. agitator drums, the open and closed head 15-gal. drums, and 100- and 120-lb. capacity open head grease drums. Check No. 6750 on the coupon and mail it to secure details.

No. 6752—Bindweed Killer

Bindweed, Canada thistle, trumpet vine and other broadleaved perennials can be eliminated for a year or longer by one spraying with a new chemical weed killer, "Tryben 200,"

states the Du Pont Co. The material is based on the dimethylamine salt of trichlorobenzoic acid (TBA) and contains 2 lb. acid equivalent per gallon. It is said to be effective through both contact and residual action. The chemical is non-selective and is formulated as a liquid to be diluted with water for spray application. Check No. 6752 on the coupon and mail it to Croplife to secure details.

No. 6749—Quackgrass Control

The use of "MH-40," trade name of a product for the control of quackgrass, wild onions and to retard grass growth, is described in new literature prepared by Naugatuck Chemical, Division of the United States Rubber Co. The quackgrass control folder includes instructions for use of "MH-40," a table for mixture, advantages, use in the garden and other information. Another folder explains the use of the product to retard grass growth along highways, cemeteries, golf-course roughs, airfields and unused areas. Check No. 6749 on the coupon and mail it to Croplife to secure the literature.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6744—Soil Fumigant

Information about the use of "Mylone" soil fumigant which has been granted federal label acceptance by the U.S. Department of Agriculture for pre-planting use on seed beds of certain vegetables is available. The manufacturer of the product is Union Carbide Chemicals Co., Division of Union Carbide Corp. The product formerly was available for use on vegetable seed beds only on an experimental basis. It is now commercially available to growers for pre-planting treatment of tomato, pepper, cabbage, egg plant and lettuce seed beds, the company states. Check No. 6744 on the coupon and mail it to Croplife to secure details.

No. 6745—Hose Swivel Bulletin

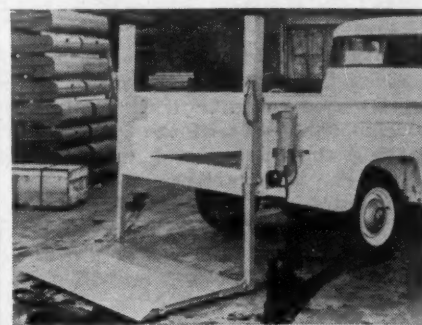
A 4-page bulletin (F-43) describes the line of hose swivels manufactured by the Jordan Corp., Industrial Sales Division, OPW Corp. The bulletin includes cut-section illustrations, product specifications, application information and other descriptive data. The hose swivels provide free, flexible movement in hose and piping systems, the bulletin states. Check No. 6745 on the coupon and mail it to secure the literature.

No. 6005—Fork Lift Truck

High stacking ability, plus easy access to low headroom areas, are claimed for the model 460 "Towmotor" fork lift truck equipped with "Triple Lift Mast." The manufacturer, Towmotor Corp., states that "Mast's" over-all lowered height of 71 in. permits safe entry into rail cars and low-ceilinged storage areas. The maximum lift is 144 in. Check No. 6005 on the coupon and mail it to secure details.

No. 6015—Pick-Up Lift

The "Express-O-Lift," a hydraulically operated pick-up lift gate designed specifically for 1/2- and 3/4-ton pick-up trucks with express-type



bodies is a new addition to the lift gate line manufactured by the Anthony Co. The unit will raise or lower loads up to 800 lb. from a truck, it is claimed. The unit can be bolted to the truck body in place of the tail gate. A small electric motor drives the hydraulic mechanism. Check No. 6015 on the coupon and mail it to secure details. Please print or type name and address.

No. 6746—Fertilizer Packaging

The use of a full overlap-flap die-cut box for fertilizers and other bulk-pack products is described in information released by the Hinde & Dauch Paper Co. The method has been found successful in packaging 25-lb. packages of fertilizer and it is said to prevent sift and provide a convenient carrying handle. Secure details by checking No. 6746 on the coupon and mail it to Croplife.

No. 6747—Systemic Herbicide

A folder describing "Amino Triazole" weed killer, a systemic herbicide for perennials, has been prepared by the American Cyanamid Co. The folder states that the product kills Canada thistle, sow thistle, quackgrass, poison oak, cattails, Bermuda grass and various other weeds and grasses. The product also destroys the roots, the folder explains. Instructions for use are included in the folder. Secure it by checking No. 6747 on the coupon and mailing it to Croplife.

No. 6748—Booklet on Materials Handling

Under the title "7 Ways to Cut Costs," a booklet recently published by the Frank G. Hough Co., explains how material handling methods are developed through the versatility of a single machine. The booklet "demonstrates the utility value of interchangeable front end attachments on Payloader tractor-shovels," the company states. Action pictures demonstrate the material handling assignments that can be made to apply to seven attachments. Condensed specifications for two models are included. A free copy of the booklet is available by checking No. 6748 on the coupon and mailing it to Croplife.

No. 6743—Trailer Sprayer

A new trailer sprayer combination for a wide range of farm spraying needs has been introduced by the F. E. Myers & Bro. Co. The spraying

Send me information on the items marked:

- ☐ No. 6005—Fork-Lift Truck
- ☐ No. 6014—Truck Hoist
- ☐ No. 6015—Pick-Up Lift
- ☐ No. 6740—"Nurse" Tank
- ☐ No. 6741—Rotary Driers
- ☐ No. 6742—Irrigation Guide
- ☐ No. 6743—Trailer Sprayer
- ☐ No. 6744—Soil Fumigant
- ☐ No. 6745—Hose Swivel

- ☐ No. 6746—Packaging
- ☐ No. 6747—Herbicide
- ☐ No. 6748—Materials Handling
- ☐ No. 6749—Quackgrass Control
- ☐ No. 6750—Drum Literature
- ☐ No. 6751—Swivel Connectors
- ☐ No. 6752—Bindweed Killer
- ☐ No. 7010—Insect Calendar
- ☐ No. 7019—Sewing Guide

(PLEASE PRINT OR TYPE)

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COMPANY

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MINNEAPOLIS,
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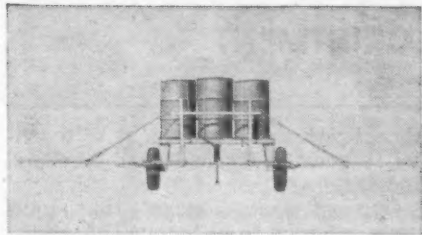
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Minneapolis 1, Minn.



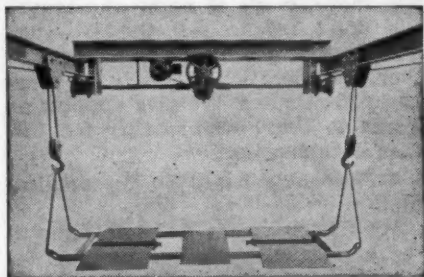
combination includes a heavy-duty trailer (3TR), a boom (ET21) and a "Myers Du-All" pump (5706). The all-steel trailer comes equipped with six barrel hook rods and may be used with one, two or three 55-gal. drums. When fitted with 6:70-15 tires, the trailer has a ground clearance of approximately 30 in. Tread width can be varied from 60 to 80 in. To secure details check No. 6743 on the coupon and mail it to Croplife. Please print or type name and address.

No. 6742—Irrigation Guide

An irrigation performance guide slide rule has been prepared by the Buckner Manufacturing Co., Inc. The guide relates such factors as spacing of sprinklers, precipitation rate, total gallons per minute, number of sprinklers, nozzle size, pressure psi, pipe length and pressure drops. Instructions for use are printed on the guide. Check No. 6742 on the coupon and mail it to Croplife to secure details.

No. 6014—Truck Hoist

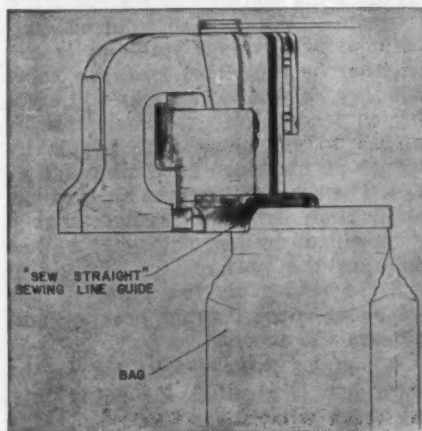
The Triumph Division of the C. O. Bartlett & Snow Co. has added a heavy-duty truck hoist to its line. The hoist is available in three standard sizes having gross vehicle weight inclined dumping capacities of 15,000 lb., 25,000 lb. and 37,500 lb., respectively. The hoisting mechanism is stationary. The design leaves the center area of the driveway clear so



the cab of a truck can be lifted up between the I-beams if necessary. The hoist's motor is totally enclosed. Check No. 6014 on the coupon and mail it to secure details. Please print or type name and address.

No. 7019—Sewing Line Guide

Users of open-mouth multiwall bags have available a new sewing line guide developed by the Union Bag-



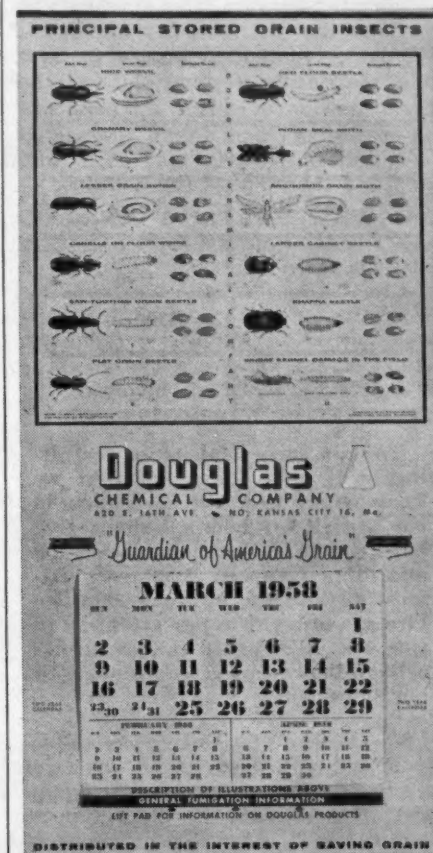
Camp Paper Corp. Called "Sew-Straight," the guide is said to insure a constant, uniformly-sewn top closure and improves the appearance of the package. Closure within one inch of the bag top is permitted. Check No. 7019 on the coupon and mail it to secure details. Please print or type name and address.

No. 6741—Rotary Driers, Coolers

Fertilizer Engineering & Equipment Co., Inc., has available drawings showing construction and operating features of its rotary driers and coolers. The drawings are in an 8-page bulletin which describes features of the units such as auxiliary controls and safety systems. Check No. 6741 on the coupon and mail it to Croplife to secure the bulletin.

No. 7010—Grain Insect Calendar

The Douglas Chemical Co. has prepared a full color two-year calendar with illustrations of 12 principal stored grain insects. The insects are



shown in their adult and larval stages and in actual size. Habits of the insects are also described. Check No. 7010 on the coupon to secure details.

No. 6740—"Nurse Tank" Transport

General Metals, Inc., is now in production on a new trailer-mounted 1,000-gal. "Nurse Tank" transport. The transport is designed for hauling nitrogen solutions and liquid fertilizers from storage tanks to the farm and out to the field. It serves as a source of supply for trailer or tractor applicator units and is used in putting the solutions on the field. The unit is especially designed for nitrogen solutions, and may also be used for transporting insecticides, weed killers and other liquid products. The transport can be backed as easily as any farm trailer and can be turned as short as any car, it is claimed. The transport unit consists of trailer, saddles, tank, fittings, hose, gauges, air compressor, front end jack, trailer hitch and all necessary equipment. Check No. 6740 on the coupon and mail it to secure details. Please print or type name and address.

Educational Tour

PORTLAND, ORE. — A two-day field trip sponsored by Oregon State College Soils Department was held in Douglas County examining the results of application of phosphates on forage crops. Thomas Jackson, extension soils specialist at the college, led a group of 20 people, including some directly responsible for the grant-in-aid program to the college.

In the evening, leading farmers of the area were invited to a dinner where informal discussions were held on all phases of fertilizer usage, especially on farm crops.

New England News Notes

By GUY LIVINGSTON
Croplife Special Correspondent

Farm problems in the New England states have been much in the limelight recently. Massachusetts farmers, beset by industry and ranch houses moving into the country in the new move toward suburban business and living, are making a determined fight in the Massachusetts Legislature to stop local assessors from the growing practice of assessing farmland, for real estate tax purposes, on the same basis as commercial and residential land.

Carleton I. Pickett, executive secretary of the Massachusetts Farm Bureau Federation, like a modern "Paul Revere," is riding the rural areas of the state, carrying to the farmer the story of Senate Bill 535. This bill, sponsored by the Farm Bureau Federation, would force local assessors to value, for real estate tax purposes, land and buildings which are "actively devoted to farm or agricultural use" on the basis of such use, and not "as if subdivided, or on any other basis." As the law now stands, assessors value property at a fair cash value—sometimes called what a "willing buyer" will pay a "willing seller." Farm land assessments in Massachusetts run from \$5 to \$1,500 an acre.

In Vermont, further evidence of the great changes now taking place in Vermont agriculture are being seen with increase in spring farm dispersal sales.

Elmer E. Towne, state commissioner of agriculture, pointed out that the move is in line with the trend reported by the agricultural economists of the Vermont Extension Service toward consolidation of small farms into larger units. "Most of the good land will continue to be in production," Mr. Towne said. "Prices being paid indicate a great confidence in the future of the Vermont agricultural industry."

Flood Control Progress

The half-way mark in the Connecticut River flood control program is in sight, the fifth annual conference of the Connecticut River Watershed Council was told at its meeting in Amherst, Mass. Alban J. Parker, Springfield, Vt., said the program would be 50% complete when dams now under construction in Massachusetts, New Hampshire and Vermont are finished. He is chairman of the Connecticut River Valley Flood Control Commission.

He said that since the disastrous Connecticut River floods of 1927, 1936 and 1938, local protective works had been installed at Northampton,

Holyoke, Chicopee, Springfield, and West Springfield, Mass., and in East Hartford, Conn. and Hartford.

Local protective works are so designed, he said, that they will give adequate protection to the properties behind them provided 25% of the watershed area above Hartford is controlled. The problem is to build adequate dams and reservoirs in the reaches of the river above Hartford, he said, so that about 25% of the 10,500 square miles lying therein will store six inches or more of run-off in the catchment areas above the dams.

Norman R. Tripp of the U.S. Forest Service told the conference that the 14 northeastern states have important and growing watershed management problems. Before management improvement can be effected, he said, two major obstacles must be overcome.

Increases in emphasis and speed on programs of watershed management and research are needed. Forest fire and insect protection must be brought to a high degree of efficiency, both state and interstate.

Combination Sprayer

A combination sprayer for weed and insect control is recommended by Cecil L. Thomson, extension specialist in vegetable crops at the University of Massachusetts in Amherst. On a combination farm sprayer for both weed control and insect control in vegetable crops, he advised one tank and boom for insecticides and a different tank and boom for weed control chemicals.

Marketing Trends

New trends in marketing and methods of Massachusetts growers are noted this year. Growers are now enlarging acreages and specializing in few crops, therefore sufficient volume to justify mechanization is achieved. They are setting up cooperatives and central packaging plants thus pooling their goods to obtain sufficient volume to justify mechanization. They are using service handlers, such as county dealers, and prepackers. In addition, many are making their own equipment in their own workshop.

NEW VICE PRESIDENTS

STAMFORD, CONN.—Dorr-Oliver Inc. has announced the election of James B. Hoxie as vice president for production and Albert L. Morris as vice president for company relations. Both newly elected officers of the company have been directors of their respective departments for a number of years. As vice president for production, Mr. Hoxie will continue overall administrative direction of the company's wholly owned manufacturing plants in Oakland, Cal. and Hazleton, Pa., and of equipment procurement from outside sources. Mr. Morris continues over-all administration of Dorr-Oliver corporate, public and personnel relations.

CHOOSE YOUR WEEDICIDE, INSECTICIDE OR FERTILIZER APPLICATOR EQUIPMENT

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Tractor, truck and trailer mounted tanks and spraying equipment.

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☐ weedicide, insecticide application equipment and parts

NAME

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TOWN or RFD

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What's Been Happening?

This column, a review of news reported in *Croplife* in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The Senate Interstate Commerce Committee approved and sent to the Senate a floor bill which would have a marked effect on the use of private carriers engaged in hauling agricultural commodities in return haul loads in interstate commerce. The amendment will be fought by the association of private carriers, but has the support of railroads and trucking associations.

The National Cotton Council advocated a program for cotton that would give individual farmers a choice between higher acreage and a lower price or lower acreage and a higher price. The program would compensate for the "large margin of error which is inherent in forecasting production, consumption and exports a year or more ahead," the Council said.

Work at the USDA agricultural research center at Beltsville, Md., may uncover information about regulating the kind and amount of fertilizer to use for maximum effect on insects and mites as well as for a maximum crop. Early studies show possibilities in this direction.

Cooperative Farm Chemicals Assn. announced plans for major additions to its nitrogen plant at Lawrence, Kansas. Cost of the expansion was estimated at \$5 million.

Production of superphosphate and other phosphatic fertilizers from July to March, was up 5% over the same period of the previous year. The Bureau of the Census reported that tonnage for this nine-month period was 1,820,223 tons against a tally of 1,740,440 tons the previous year.

Congress was preparing legislation to provide funds for research on the effects of pesticides on wildlife. Government officials hailed the move as being one of the most constructive to come about in years, in bridging the gap between the USDA and the Department of Interior caused by misunderstanding in seeking ways to gain common ends.

Two new pesticide plants were completed in May. One, operated by Arizona Fertilizers, Inc., Phoenix, is located at Willcox, Ariz.; the other, by General Chemical Division, Allied Chemical Corp., is in Minneapolis.

Fertilizer prices are up about 1% at the retail level this year, according to the U.S. Department of Agriculture. The 1% represented that much of a gain over the retail prices of last year.

Mid-South fertilizer sales were running below those of the previous year mostly because of foul weather which plagued agriculture earlier in the season. Some manufacturers and distributors reported that sales were as much as 30% behind last year, but deliveries were picking up well.

A report by the U.S. Department of Agriculture indicated that grains stored on farms in a number of midwestern states totaled 2.5 billion bu., and that further expansion of farm storage facilities will be needed. This situation was seen by *Croplife's* Washington correspondent, John Cipperly, as presenting an opportunity to the pesticide industry for sales of protective products for the stored materials.

Dr. William P. Boyer was named head of the chemical division of Virginia-Carolina Chemical Corp., Richmond.

North Carolina's state board of agriculture, made three changes in its official fertilizer grades. The grade 0-13-36 replaced 0-20-40, and 13-13-13 was deleted. A new grade, 4-8-12 was added for use on tobacco.

That an ample supply of pesticidal materials will be available for the current growing season was indicated by H. H. Shepard, USDA, in the annual "Pesticide Situation" report published in *Croplife*. Requirements for the year were estimated as follows for some of the widely-used pesticidal materials: DDT, 65 million lb.; Aldrin, chlordane, dieldrin, endrin, heptachlor, and toxaphene, combined, 45 million lb.; BHC, 8 million lb.; calcium arsenate, 15 million; copper sulfate, 30 million; 2,4-D (acid equivalent), 25 million; lead arsenate, 10 million; pyrethrum, 7 million; rotenone, 6 million; and 2,4,5-T, 2.5 million lb.

An infestation of desert locust, or band-winged grasshoppers, in Arizona was brought under control after a ten-day cooperative federal-state spraying effort over some 140,000 acres of desert land adjacent to irrigated crop lands. Several thousand acres of cotton and vegetable crops were damaged by the insects, but the control measures are credited with saving the major portion of crops.

Hugo Riemer, president of the Nitrogen Division, Allied Chemical Corp., New York, left his post after a career of 23 years with Allied. Mr. Riemer was a director and member of the executive committee of the National Plant Food Institute and prominent in the plant food industry.

Agricultural deliveries of potash were down 6% during the first three months of 1958, the American Potash Institute reported. Deliveries by the eight principal American producers totaled 929,326 tons of salts containing an equivalent of 544,204 tons K₂O.

The cotton industry, after a long period of disagreement, conceded that it must accept lower prices and expanded acreage if the industry as a whole is to avoid hard financial times. In May, the industry appeared to be ready to back legislation which would provide a basic cotton acreage allotment of 14 million acres from which a 30% excess of plantings would be permitted without penalty.

Pesticide exports during 1957 totaled more than 317.7 million pounds, worth more than \$86 million, the U.S. Department of Commerce reported. These figures represented an increase of 8% in volume and 5% in value over the previous year.

Scientists at the U.S. Department of Agriculture announced that chemically-chelated metals can be applied to soils to make them available to growing plants.

SALESMAN RECRUITMENT

(Continued from page 9)

organization is headed by a director of sales. Then come the division sales managers. They direct the district sales managers, who supervise our salesmen. At present, we have nine district sales managers who supervise 135 salesmen.

We expect our district sales managers to find the sales replacements needed in their districts. After they find an applicant whom they are willing to recommend for hiring, the applicant is further processed by the sales staff in the home office. Those on the sales staff responsible for the final approval collaborate very closely with the division sales managers as well as the district sales managers. We have found it necessary to have one man fully responsible for the final decision of hiring an applicant or rejecting him. This individual "weighs all the evidence" as a final step and then makes the decision.

HOW WE RECRUIT AND SELECT SALESMEN? Our procedure involves steps that can be classified as recruiting, which we consider searching for new salesmen, and final selection of the applicants recruited. Our program contemplates that these two efforts are carried on continuously.

To do a successful job of recruiting, it is most important that we know where to direct our efforts in our search for new salesmen. Our best source is our own salesmen and other company employees. Almost 40% of the new salesmen we hire are brought to our attention in this way. We regard this as an excellent indication of the morale of our salesmen.

We ask our salesmen to discuss an applicant with the district manager before anything is said to the applicant. This enables the district manager to explore the qualifications of the applicant on the basis of information furnished him by the referring salesman. If it appears desirable that the applicant come in contact with the district manager, the salesman urges the applicant to write a letter or call the district manager.

It is desirable for our salesmen to acquaint the applicant they recommend with the opportunities of our company, but not to oversell him on them, because it is essential the applicant be acceptable to us before he becomes too thoroughly sold on us and assumes we will hire him in view of our salesman's recommendations.

Colleges as a Source

Our next best source for good sales applicants has been colleges. Some 27% of those we hire come from this source. Our procedure for working with institutions of this kind varies, but, as a rule, we work through the placement bureau, or through the offices of the deans or through department heads and key professors.

The next category is the private employment agency or the state employment service. About 16% of the men we hire come from this source. We find it necessary to discuss our requirements and qualifications with the proper people in the agency or bureau, and we like to acquaint them thoroughly with our procedure. In most instances, the agencies submit abstracts on applicants referred to us before we have an interview. This helps in our pre-interview screening procedure.

The balance of the applicants come from various sources, such as people who write in for a job, those who come into the home or district offices for a job, and those referred to us by dealers, businessmen or stockholders.

Previous occupations of salesmen we hire, except for those who come out of the colleges and universities, have ranged from farm implement salesmen, automobile sales, appli-

ance, brush and oil salesmen to teachers, especially agricultural teachers, and coaches.

Our experience indicates that applicants referred to us by our own salesmen and those with whom we have come in contact at the colleges and universities have proved most successful. In addition to this, we find that the large majority of men we now hire are college and university graduates.

SELECTING SALESMEN: Our selection program is a step-by-step procedure involving: (1) pre-interview screening; (2) a thorough review, and (3) evaluation.

PRE-INTERVIEW SCREENING: Screening is both a fact-gathering and evaluation procedure. All possible screening should be done before granting an interview. This eliminates the need for an interview with unqualified applicants; it helps to conduct a better interview with desirable applicants; it helps to evaluate them more accurately.

There are three forms of screening:

1. Initial screening: Two types—

First are the mail or telephone inquiries. Men who call or write in may be eliminated immediately if they fail to meet the standards of age, education, experience and general qualifications. Those not eliminated should be sent an application form with a short letter thanking them for their inquiry and requesting return of their application.

The second type of initial screening is the preliminary interview. In this interview we describe the position in a general way. If it does not appeal to the applicant, he disqualifies himself. If the applicant seems interested, we find out if he meets our age, education and experience standards. We determine his reasons for seeking employment with us, whether compensation will be satisfactory, whether he will move, work at night and travel. We don't try to sell the job—just qualify or disqualify the man from further consideration. Usually it takes 15 to 20 minutes. We give application forms to those who qualify for further consideration.

2. Screening based on the application.

We check again to determine if the applicant meets our over-all requirements for age, education, experience and the like. We note especially if the application is made out completely, because omissions may indicate shortcomings or inconsistencies.

Complete Analysis

Our application form is not loaded, but it permits a fairly complete analysis of the applicant's qualifications. If he can't account completely for his employable years, or if he has changed jobs frequently, there is reason to question his stability. A question can also be raised about the stability factor if he has moved his residence frequently. We can tell from his educational pattern how stable he is and whether he completes jobs. We know whether he was industrious while going to school. We can determine his ability to get along with people by virtue of his extra-curricular activities. The screening on the basis of the application helps us predict what a man will do by learning what he has done in the past.

3. Screening on the basis of the telephone check through previous employers and schools.

We make these checks before the interview is granted. By doing this, we know what areas to stress in the interview, what items need careful probing and what aspects of the applicant's background need clarification. While we use letters in some instances, we have found the time and money spent in telephone checking give us far better information about the applicant than letters.

We have a specific form for tele-

phone checking, and with a little experience one has no difficulty whatsoever in using the telephone check form to get information. It is important to use a specific form so that useful information is obtained.

PATTERN INTERVIEW: Once an applicant is favorably considered on the basis of our screening procedure, he is invited to have an interview with the district manager, or if the applicant is located near our home office he is invited to have the interview with one of the sales staff members. This interview is known as the "patterned" or "structured" interview. In it, we use specific questions and write down much of the information the applicant gives us. We read identical fact-finding questions to every applicant, covering his work and service history, his schooling, his early home environment, his current financial situation, his present domestic and social situation, and the state of his health. Many additional "probing" questions occur spontaneously in the average interview.

The great merit of using set questions is that they impel the applicant to talk and the interviewer does the listening. Nothing important is overlooked, and the information is written out. In addition, the interviewer records the essence of the replies that go beyond the specific information. This patterned interview gives you a pattern of the applicant as to what he can do and what he will do.

Before we adopted this system of interviewing, we were experiencing difficulty in conducting an interview and obtaining the type of information needed. We also discovered too much consideration was given to the applicant's appearance, manners and his ability to talk during the interview. In addition, we were apt to be influenced by the applicant's excuses, rationalizations and promises rather than by determining what he will do on the basis of what he actually has done. And, of course, the great danger always exists for the interviewer to be overly influenced in his final evaluation by his personal biases and prejudices.

Searching Procedure

The patterned interview is a thorough and searching procedure which provides important controls that overcome the faults and limitations of ordinary interviewing procedures:

1. It is a systematic plan for interviewing, and it gives a complete coverage of the applicant's work experience, education and training, family background, present domestic and social situation, financial condition, and health.

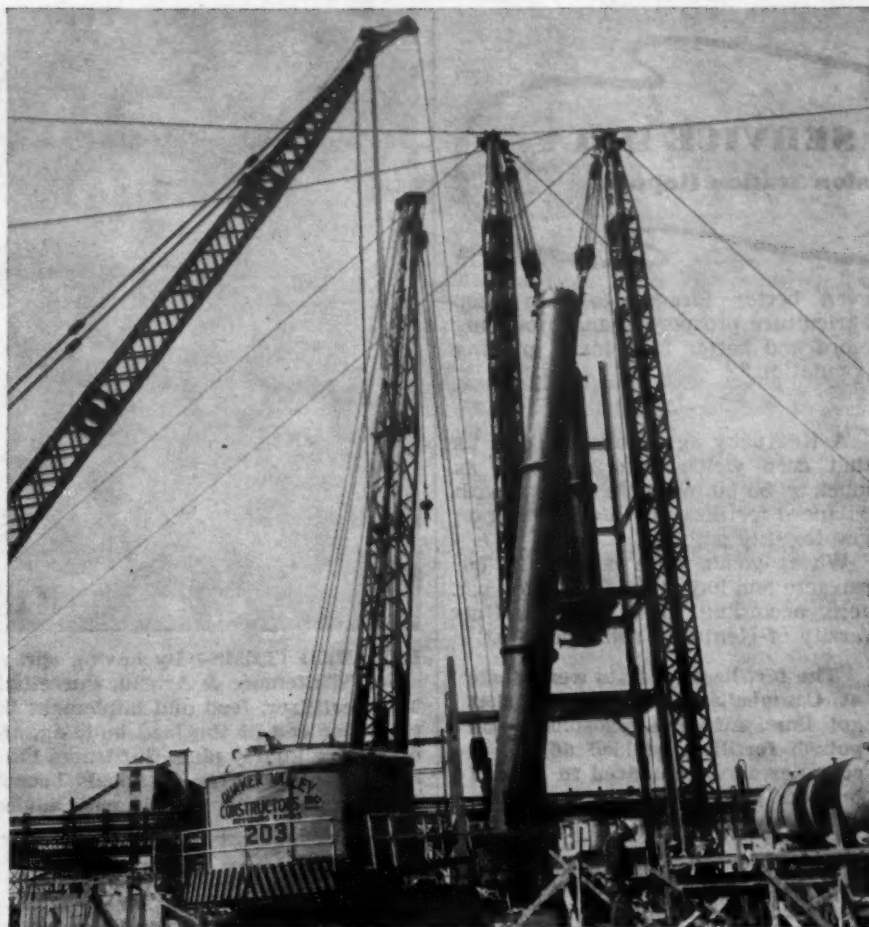
2. It is a technique for getting the facts through a series of penetrating questions.

3. It is a procedure based on a set of principles for interpreting the facts. The interviewer will not only be able to determine what the applicant can do, but what he will do.

When the interview is completed, the district manager reviews all of the applicant's letters, his application form, information from telephone checks and the information he has obtained through the interview. He then evaluates the qualifications and makes out a summary of his evaluation.

One important question may arise here. How far do we go in taking the family into consideration? We try to interview the applicant's wife as much as possible. We certainly do it where there is any question of the importance of the wife's influence on the man's work habits. We also do it where there is question as to whether the family will present a problem where moving is a factor. In the course of the interview, we are especially interested in who is the boss, how the family influences the applicant and what it thinks of the job.

Another question usually asked is, "Does the district manager make his evaluation before he sees the results from any tests?" His evaluation is



PLANT TAKES SHAPE—A reactor to be used in Spencer Chemical Company's new urea facilities at Henderson, Ky., is shown being placed in position. Construction of the plant, with a 100-ton-a-day capacity, is expected to be completed sometime during the summer. The reactor shown above has a 5½-inch-thick shell designed to withstand high temperatures and pressures involved in manufacturing urea. The reactor weighs 85 tons. Urea to be produced by Spencer at Henderson will be primarily for fertilizer use, both as a solid prilled material and also as a component in nitrogen solutions. This plant is Spencer's second urea facility. The other one, at Vicksburg, Miss., produces solutions only.

not based on tests. It is predicated on what the person has done as revealed through the information obtained from the applicant.

If the district manager recommends that the man be employed, the entire file is forwarded to the home office where it is reviewed. If the information indicates that the district manager's recommendations are sound, the applicant is invited to come to the home office for further interviews and testing.

The district manager makes his recommendations on a summary evaluation form.

The patterned interview form has a number of analysis questions that are correlated with the questions in the evaluation form. This helps the interviewer evaluate the information he has obtained in the interview.

EVALUATION: The summary evaluation is divided into two parts. The first deals with the "can do" factors of the applicant and the second with the "will do" factors. Under "can do," we evaluate sales ability, appearance and manners, education, speech, intelligence, experience, financial status and physical condition. Under "will do" we analyze the applicant's work habits and character traits, his motivations or drives, his personal interests and their effect on the job, the family influence and the applicant's maturity.

At the home office the applicant is generally given supplementary interviews by staff members who review all information about the applicant before conducting the supplementary interview. These are streamlined to ascertain the applicant's understanding of the work, if hired, as well as compensation. He is given an intelligence test which is graded on the spot, and he completes other forms used for projective analysis of the applicant. This analysis is made by a consultant. Quite often an applicant is not considered favorably after he has been interviewed at the home office. Each interviewer in the home office also completes an evaluation summary showing his conclusions.

As indicated earlier, one person is charged with the final responsibility

for a decision. The last interviewer generally reviews the information contained in the patterned interview and asks several new questions. If we favor hiring the applicant on the basis of facts at hand, we arrange a physical examination.

When results of the physical examination, together with the report of our consultant, come to the hands of the person charged with the final decision, he makes the decision and either the district manager or the applicant himself is advised of the decision.

The method described has been in operation for three full years. Of the new salesmen hired during this period, 88¼% are making good despite the fact that during this period the demands placed on our salesmen have increased considerably.

We expect further mortality. But based on our experience with our selection and training program, it is safe to predict that fully 80 to 85% of the men we have hired with this program will succeed and continue to be productive salesmen.

Salad Bowl Area Site For Operation Iceberg

DIGHTON, MASS.—This "salad bowl area of New England" is again the site for "Operation Iceberg," commonly known as the vacuum cooled lettuce operation of the Southern Massachusetts Vegetable Growers Cooperative. June 4 marked the first day of this season's vacuum cooling activities, which will continue well through July 4 due to the increased seeding of native Iceberg lettuce.

Last year, for the first time, native grown vacuum cooled Iceberg lettuce was marketed from Tampa, Fla. to Montreal, Canada by the Southern Massachusetts Vegetable Growers Cooperative. This year, the board of directors of the cooperative has made it possible for any farmer in Massachusetts, Rhode Island or Connecticut to have lettuce vacuum cooled, providing they meet the standards established by the cooperative.

OVER THE COUNTER

(Continued from page 9)

mobile work, fertilizer and feed. Then the route man delivers whenever he gets a load. But we have no definite route schedule," says Mr. Frith.

The firm also employs a regular farm machinery salesman. If he runs across a fertilizer lead he refers it to the fertilizer salesman. Mr. Frith states that it takes much more time to sell farm machinery than it does to sell fertilizer, and so they like to have one man concentrate on farm machinery.

"However with two salesmen out in the territory we do contact many farmers," says Mr. Frith, "and we get a lot more business than if we tried to sell only from the mill."

There is a small farm supply store in the office area of this firm, and Mr. Frith and his employees try to sell many items to farmers such as small sprayers, farm chemicals, silo silage preservative preparations, poultry and livestock remedies. Many additional sales can be picked up through good display and sales suggestions, this farm store manager reports.

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FARM SERVICE DATA

Extension Station Reports

It used to take a long time for farmers to adopt new ideas from the college research man, but not so today.

An extension service survey by New York county agricultural agents, just recently completed, shows New York dairy farmers have been adopting the newer forage crops much faster than they did similar research in the past.

The survey brought returns from 49 of the 56 agricultural counties in New York. It was intended as a check on a forage program the State College of Agriculture at Cornell University has emphasized the past few years.

Alfalfa acreage has doubled in the past 10 years, and birdsfoot trefoil, another legume, with only a few hundred acres 10 years ago, is rapidly becoming a big league crop, Cornell agricultural professors pointed out.

Forage crops are highly important to dairy farmers in reducing costs of production, they said. The more home-grown, top-quality forage the dairyman can raise and the greater the proportion of milk produced from the cheapest source of feed, the less dependent the dairyman is on expensive purchased grain. And without the higher yields of the new varieties, the farmer of the future won't be able to survive, they said.

In less than four years of the Extension Service forage program, the survey showed, more than 88,000 acres of the newer alfalfa varieties have been planted by farmers. This represents only a part of the acreage since it is based on a 20% return of questionnaires. Reports came from nearly 9,000 farmers. Names like Narragansett, Vernal, and Du Puits, unheard of in the alfalfa world a few years ago, are common today. Du Puits alone, recommended only the past two years, is blooming on more than 20,000 acres.

Farmers choose the variety that best suits their soil and climatic conditions, or may even try mixtures of legumes. A new one catching on fast is alfalfa plus birdsfoot trefoil.

Over New York, counties showing the largest acreages in alfalfa, according to the survey, are Ontario, Cayuga, Livingston, Monroe, Onondaga, and Wyoming. These counties are also high in acreages of new varieties.

Another fast mover in recent times has been "birdsfoot trefoil," a long-lived, drouth-resistant legume good for hay and pasture on soils that are not well drained. Here again, the figures show an active farmer interest. In the 20% sample of returns, more than 107,000 acres are listed for birdsfoot trefoil, and another 35,000 acres for a trefoil-alfalfa mixture. One farmer remarked, "After I put in trefoil, people came from all over the county last summer to see it."

Leader in the birdsfoot trefoil acreage is Steuben County, followed by Cattaraugus, Allegany, Chautauqua, Delaware, and Tioga counties. Most of the acreage is in the Empire variety which is grown mostly on soils not suited to alfalfa, but Viking, a newer introduction, is gaining.

As explained by Prof. W. E. Washbon, assistant state leader of county agricultural agents:

"Dairymen are recognizing the importance of a good forage program in the economical production of milk. It will be even more evident ten years from now when there undoubtedly will be fewer farms, better cows, and

even better forages to help keep agriculture prosperous and producing more and better food for a growing population."

★

A Kentucky agronomist reports that corn yields were increased as much as 55 bu. per acre in tests with balanced fertilization in a rotation on low fertility soil.

Wheat yields were boosted 24 bu. per acre and hay more than a ton per acre, according to E. C. Doll, University of Kentucky soils specialist.

The fertilization tests were made at Campbellsville, Ky. Plots that got lime, nitrogen, phosphate and potash fertilizer yielded 66 bu. of corn per acre, compared to only 11 bu. on plots that received lime alone, says Mr. Doll.

The balanced fertilization plots yielded 25 bu. of wheat per acre, compared to only one-seventh of a bushel on plots that received lime alone. Hay yields were 1.7 tons per acre, as against four-tenths of a ton per acre.

The three-year rotation included corn, wheat and red clover.

Only one cutting of the red clover was made because of too much rain, Mr. Doll reports.

★

Recent research in Connecticut has disclosed that post-spraying hordes of mosquitoes may be the result of mosquitoes reproducing explosively, a happening, entomologists report, which occurs in many lower forms of life when faced with death. Dr. Robert C. Wallis of the Connecticut Agricultural Experiment Station reported that he found that female mosquitoes that have been bred start laying eggs like a blizzard when a lethal dose of insecticide strikes them.

★

Four applications of properly timed copper sprays will control black rot and downy and powdery mildew of grapes, according to Dr. Alvin J. Braun, Cornell plant disease specialist at the New York State Experiment Station at Geneva.

Frequent complaints received at the station about grapes turning white on the vines indicate that downy mildew is present in the vineyard, says Dr. Braun. Fredonia, Niagara, and Catawba grapes are especially susceptible to infection of the fruit by downy mildew, he explains. Concord grapes, on the other hand, are virtually immune to downy mildew, but are susceptible to black rot and powdery mildew.

Good control of these maladies in both commercial and home vineyards is possible with the use of sprays containing fixed copper and lime, Dr. Braun said. Where the fixed copper material contains about 50% metallic copper, it should be used at the rate of 2 lb. per 100 gallons, or at the rate of about one third ounce per gallon where only a few vines are to be sprayed. Spray lime is added at the rate of four pounds in 100 gallons.

★

Green dyes for dormant grass may well find a permanent place in turfgrass management, according to Dr. Victor B. Youngner, turfgrass specialist at the University of California, Los Angeles.

Recently developed colorants from the chemical industry were tested last fall at UCLA, Dr. Youngner reports. Most gave good coloring to browning grass plots for two weeks



RELATED ITEMS—By having sprayers displayed near the pesticides in the store, Whitmore & Arnold, Purcellville, Va., sell many of them to gardeners. This fertilizer, feed and implement firm has a separate farm supply store in the front end of the feed building, and the walls of the store are finished in attractive knotty pine. Gardeners like to come here to get insecticides, sprayers and other farm chemicals because the two-man staff is well-informed, friendly and ready to help with advice on spray problems.

after applications. Several maintained good to fair color up to eight weeks and may have lasted longer under ideal conditions.

All compounds tested exhibited little rub-off after drying.

In addition to offering a solution to brown winter lawns, the new products may also be used to color disease-killed turf until replanting is possible or turf brown from lack of water, the UCLA turfgrass expert said.

★

Backyard fruit trees in Massachusetts are threatened with wholesale infestation by San Jose Scale, a pest that weakens and kills twigs and branches—even entire trees at times.

Growers in the Commonwealth and adjacent states have reported the presence of the scourge in pears, peaches, apples, plums and cherries. Telltale marks of the unwelcome visitors are found on apples with tiny, round scales or red spots left where the insects settled and fed.

These marks are being found in more and more boxes of apples. The result: Scale marked fruit is downgraded for local sales and may be refused for export.

Ellsworth H. Wheeler, extension entomologist, University of Massachusetts, urges apple growers to give full attention to the control of this scale during 1958 and the next two or three years.

"If already known to infest any block, an oil application seems essential," he advises. Other measures should supplement the oil spray.

Dr. Wheeler also recommends an oil spray this year for all home orchards. "The application of the oil spray must be applied just as the buds start to crack open," he continues.

Dr. Wheeler suggests a program of oil, once every three years as a logical and adequate measure in orchards where San Jose Scale is not noticeable now. "This action," he concludes, "if thoroughly carried out, might well serve to hold in check an incipient outbreak."

★

The acting chairman of the department of entomology at the University of Delaware has recommended spraying elm trees to control Dutch elm disease.

Prof. Donald MacCreary said the disease is controlled by spraying the elm bark beetle during late dormancy. Since these beetles serve as carriers of the fungus disease, Prof.

MacCreary said it is essential to prevent them from feeding on twig crotches and bud axils.

To accomplish this, he said, all bark surfaces must be thoroughly sprayed. The spray should be applied just before the elm flowers are out. Injury may result and poorer coverage will be obtained if the application is made when new leaves are appearing, the entomologist said.

He suggested spraying with conventional hydraulic sprayers eight gallons of 25% emulsifiable DDT concentrate per 100 gallons of water.

The spray should not be confused with a later one used to control the elm leaf beetle, Prof. MacCreary cautioned. This spray is applied after the leaves appear, generally in late May, using two pounds of 50% wettable DDT powder per 100 gallons of water.

★

Quackgrass and bedstraw—two weeds that spread through creeping rootstocks—are the two most economically important weed threats to Vermont farmers, reports Dr. T. R. Flanagan, Vermont extension weed specialist.

Quackgrass is such a problem that the federal government is sponsoring research by several agricultural experiment stations. Vermont is expected to start some work on seeking basic factors involved in the life-cycle of this grass.

Bedstraw is also drawing the attention of research workers in Vermont. Current efforts at the experiment station include a survey to determine how widespread this weed is and how much damage it is doing to farmers' fields.

★

In spite of one of the severest drouths in history and an unusually active spring and fall frost season, Massachusetts cranberry growers raised their fifth largest crop on record. The New England Crop Reporting Service estimated the Massachusetts cranberry crop at 585,000 barrels. This is 29% greater than the 452,000 barrels harvested in 1956 and 4% more than the 10-year average of 560,000 barrels.

In spite of a decline in acreage, cranberry production in Massachusetts has shown a steady increase. The largest crop in history was produced in 1953 when a total of 690,000 barrels was harvested. Other large crops include the 1950 production of 610,000 barrels, the 1948 crop of 605,000 barrels and the 585,000 barrels of 1957. The continuance of the upward trend in production depends largely on whether there is a marked improvement in returns to growers, the state agriculture department reports.



Doing Business With

Oscar & Pat



By AL P. NELSON
Croplife Special Writer

A tall, black-eyed man of about 50 parked his ten-year-old automobile in front of the Schoenfeld & McGillicuddy farm supply store. He got out, stretched his long form and gazed about him. Then seeing Pat McGillicuddy spraying raspberry bushes in the firm's demonstration garden, he came over, a frown on his face.

"More poison!" he exclaimed. "How can you put that stuff on those raspberries? The whole human race has gone crazy. They should eat pure fruit—no chemicals should be used on the bushes."

Pat smiled. He recognized Emory Cracklebush, an organic farmer who had a sizable truck farm four miles out of town and who was dead set against use of chemicals in any phase of crop raising.

"Oh, come now, Emory," Pat said with a grin. "I've got scores of customers who spray raspberries three or four times each year and get fine crops. Before they began spraying, their raspberries were diseased."

"That's not the way God wants food to be raised," said the tall organic farmer. "He knows what the plants need. And they don't want poison. That's what you're putting on."

Pat put down the hand sprayer and came closer to the farmer. "The U.S. Department of Agriculture sets tolerances for the use of chemicals in spraying, Emory. You mean the people shouldn't believe those trained officials?"

Cracklebush shook his head. "They don't know what they are talking about. They're blinded by the chemical bug. They think it's the solution to everything."

"Those men are dedicated to public responsibility," Pat said slowly, "and they have a scientific education in their field. They know what's safe for the American people to eat. A lot of us are living pretty well."

"It won't last," the organic farmer predicted gloomily.

Pat smiled. "Then why are people living longer these days than in other years? Can the wise use of chemicals in medicines, in producing more and better food have something to do with it?"

"We are raising an inferior race," the organic farmer persisted stubbornly. "It will show up soon. What I can't understand is why you have an organic materials department, when you also sell chemical fertilizer."

Pat chuckled. "Why not?" he asked. "You fellows like rock powders, lime, blackstrap molasses, sunflower seeds and a lot of other items. I can make a profit selling them, and I don't think they are harmful, just as I don't think chemical fertilizers and sprays are harmful when used properly. Both have a place in modern life."

"But it would be better for the human race if we used only organic fertilizer," said Cracklebush stubbornly.

"I don't know about that," Pat said slowly. "I'll leave that to the experts. But I do know that there's not enough manure and other organic materials to meet the needs of today's agriculture. The land is producing more every year. If it is so worn out due to chemicals, why do we get big crops?"

The organic customer sighed. "I wish you were on our side, McGillicuddy. You have a way with people. If you threw out your chemical fertilizer and sprays and sold only organics, I would be glad to swing a

lot of business your way. I know a lot of organic people in the county."

"Thanks," smiled Pat. "I think I'm doin' all right now, sellin' the merchandise we have. And I believe in it. And I do think I can help you in your truck gardening."

Suspicion came into the eyes of the organic farmer. "How do you figure that?"

"When I drove by your place the other day, I saw your small garden tractor standing outside. It's rather old, isn't it?"

Emory nodded. "Yes, it heats up quickly. But it served me well in its day. A new one costs too much, though."

Pat eyed his customer. "If you buy a new and larger garden tractor—one that will handle your garden work easily—I'll give you a good allowance on your old one."

"But I couldn't afford it," said Cracklebush. "I've had a lot of expense this year."

"You have many friends interested in organic farming," Pat said. "If you had a new garden tractor, many of them would come and see it work. Some might be interested in buying tractors of their own. I'd give them a good deal. These tractors can ease plowing and cultivating for your friends. And if I could trace a sale to your recommendation, I'd give you—say, 6 or maybe 7 per cent. That way you'd pay for your tractor eventually through commissions."

Cracklebush was lost in thought. "Maybe I could swing it," he said. "That old tractor does stop quite often. It needs some repairs. And if I could pay for the new one through—"

"I might even pay you a small commission for orders you get me on agricultural limestone, rock powders,

etc." Pat said. "You classify these as organic products, don't you?"

Cracklebush nodded. "My God, McGillicuddy!" he said startledly, "you mean, you mean I'd be selling for a chemical fertilizer store?"

Pat shook his head. "Not exactly. You'd be selling for Emory Cracklebush, and you'd be selling products you believe in. Both of us will be ahead."

"I never thought of it," said Cracklebush a little dazedly. "But I do think it would work. I know two or three I think I can sell tractors to. So this is what the Russians mean when they say 'peaceful co-existence.'"

"No," Pat said slowly, "it isn't. I'll respect your views and your ways of doing things, and you respect mine. But we can still do business together—in some ways, and both of us can benefit."

OHIO LEAFLET

COLUMBUS, OHIO—Recommendations for chemical weed control in field crops are contained in a new Ohio Agricultural Extension Service leaflet, prepared by D. D. Bondarenko and C. J. Willard, agronomists of the Ohio State University and the Ohio Agricultural Experiment Station.

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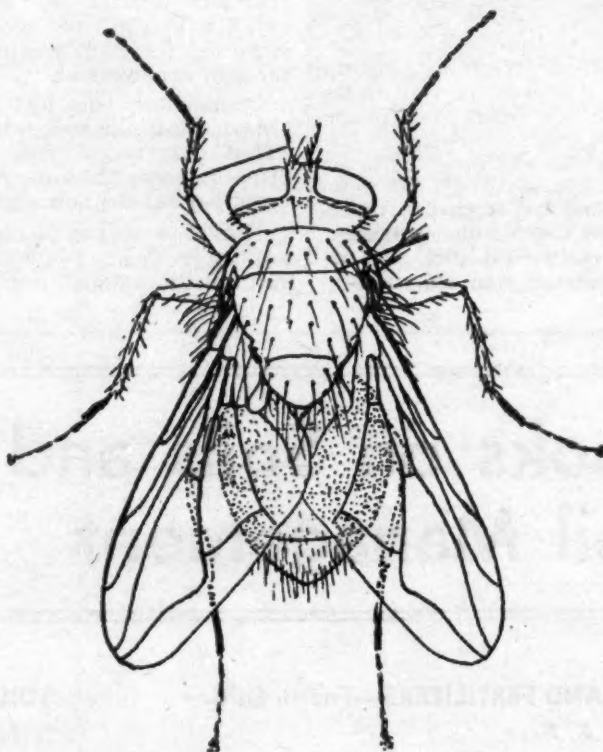
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BUG OF THE WEEK

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Blow Fly

How to Identify

Blow flies, often called green bottle flies and blue bottle flies, are of many kinds. The "green bottle" fly is almost twice the size of the common housefly, and is a bluish-green color. Reflections of light give it a bronze appearance. The black blow fly is dark greenish color all over and is larger.

Habits of Blow Flies

Life cycles of blow flies are similar to that of the house fly. They breed mainly in the carcasses of dead animals and in meat in garbage. Although they are seldom so numerous as houseflies, they carry many of the same disease-producing organisms. The larvae of blow flies also develop in wounds or natural openings of the body. Some species, true parasites, develop in the tissue of living animals. The flies spend the winter in the larval or pupal stage in soil or in manure. After appearance in the early spring, the pests continue breeding throughout the summer unless this activity is checked by dry weather. A generation is completed in about 3 weeks, from egg to egg.

Damage Done by Blow Flies

These pests cause considerable losses to cattle, horses, hogs, sheep and goats. According

to USDA figures, blow flies cause an estimated annual loss to these animals of more than \$15 million. Chickens, too, can be affected by the fly, though indirectly. At times, fowl become ill and die from ingesting blow fly maggots that have developed in contaminated meat. The blow fly is also suspected of being a carrier of a number of human disease organisms.

Control of Blow Fly

An obvious means of control of these flies lies in sanitation, or removal of situations conducive to egg-laying and protection from cold weather. A number of insecticidal chemicals are effective in control. Recommendations for control materials, timing, application practices, dosages, etc., may vary widely in different states and sections of the country. It is therefore difficult here to attempt to give specific suggestions as to what materials should be used or how they should be applied. Local authorities such as county agents, state experiment station entomologists, and manufacturers of the various pesticides should be consulted for specific information. Labels on pesticide containers carry full instructions on use and dosages. Users should always be urged to study labels carefully before applying any insecticide on food or feed crops to avoid the risk of illegal residues at harvest time.

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EXPENSIVE PROCEDURE . . .

Basic Research Costly but Necessary in Development Of New Chemical Products

By R. D. Northcraft*

Pennsalt Chemicals Corp.
Tacoma, Wash.

American farmers are customarily regarded as being very productive compared to farmers in other countries, but actually some authorities say our farmers produce only about one-third as many calories an acre as do Japanese farmers and only about one-half the amount obtained by Western European farmers.

In fact, calorie production per acre in the U.S. is about equal to production of the great masses of Asian farmers. The Japanese produce about 13,000 calories of potential food an acre per day, Western Europe about 7,500, while the Asians and ourselves average about 4,500 calories a day per acre. From these figures, we may draw the jolting conclusion that our modern agricultural technology is not yet able to compete with more primitive methods.

If this is true, why are these people hungry? The answer is that they have too many people living on too little land. In this country, we use chemicals and ingenious machines to cultivate acreage in excess of our minimum requirements. Research continues to find ways and means for even more efficient farming methods.

The subject of this paper is "Research and Profit." But first, a definition of what is research. Basic research deals with problems whose results are unforeseeable, hence, unpredictable, whereas, applied research concerns problems with a predictable and, from standpoint of industry, possibly a profitable result. To be more specific, agricultural chemicals should be defined as pesticide chemicals. Pesticide chemicals are defined by USDA to mean insecticides, fungicides and herbicides. The present discussion will be limited to basic research and not applied research. Profits are considered to be percent return on investment before taxes and after depreciation.

Although death and taxes are reputedly certain it is no less certain that business must make a profit in order to survive. Therefore, basic agricultural chemical research will be sponsored by business only if a reasonable profit is possible. I will, therefore, talk first about profit.

One large company recently made a very thorough comparative study of various industrial fields and finally decided that the chemical industry had one of the best annual growth rate potentials. As a result of the study, the following figures were obtained: The chemical industry has enjoyed about 10% average annual rate of growth since the war, compared with an average 5% for all industry. Probably a most important reason for this phenomenon is that, on the average, the chemical industry spends about 3% of its gross sales dollars for research while industry as a whole spends about 1%.

Additional recent studies have shown that for each dollar invested in new product research, the chemical industry averages at least \$5 in new products sales—a productivity ratio of about 5 to 1.

With this record, I believe it is certain that the chemical industry will receive a fair share of the investment dollar and that expenditure for basic research in chemistry

will continue. But how much of the research dollar will be invested in basic agricultural research? The answer to this question is hidden under lock and key in the net profit columns in the accounting departments of various chemical corporations who have had experience in basic agricultural chemical research. However, some general figures are available.

Let us compare how the industrial chemical activities and agricultural chemical activities have recently been succeeding in percent return on investment. Such information will provide a target at which basic agricultural chemical research must aim if it is to receive its share of money to invest in basic agricultural chemical research. In a recent talk addressed to the National Agricultural Chemicals Assn. meeting at San Francisco Fred Shanaman indicated that the chemical industry, exclusive of agriculture, obtained an average return on investment of 20%. In comparison, agricultural chemical industry was reported to provide a return of about 6.2%.

Now that some figures have been provided on research and profit, in keeping with the title of this paper, a few of the possible ways of calculating such results will be discussed. One of the largest research questions is the problem of accurately evaluating the profitability of research.

The two questions, how to correlate past research with resulting profit already in hand, and how to select research projects to obtain maximum return on basic research investment are actually two sides of the same coin. The former uses hind sight and the latter uses foresight.

For example, to estimate profit already received from a research project, it is necessary to decide what figure to use. Conversely, to determine possible project profitability, it is necessary to predict what the various figures will be. Thus, a common formula or method may be used to answer both questions. To simplify the discussion, let us first consider procedures used to correlate profits already derived from research already performed.

A most direct approach is to allocate all the net profit derived from a new product to the research project which provided the product. However, sales personnel would hardly allow such a procedure, since it belittles their art.

In another case, a large company allocated to research, the total net profit in the best year following introduction of the new product.

Somewhat more involved procedure is used to compute research profit by another company. In this case, profits from a new product are computed separately from profit derived from an established or from a modified old product. Profit derived from new product is allocated to research and then divided by research cost. The figure obtained represents dollars return per dollar invested in research. Ratios range from 15 to 0—averaging 2 to 4.

Another method, the "Index of Return," has been reported by Olin Industries. This method credits the research project with 3% of gross sales for a period of three years.

Despite several days of searching

in the library for a foolproof formula that would select profitable basic research projects, I can report that there is no foolproof formula. It remains a matter of considered judgment and experience. However, the Index of Return has been used with some success in the following way:

Estimated Index of Return X Probability of Success Estimated Research Expenditure

In translation, the formula simply says that a lot of profit must be made to support basic research. Anybody knows this. A formula has the advantage of putting certain facts in writing so that they are at least out in the open. Also, it forces more people out on more limbs—for example sales, research groups, etc., who are responsible for providing the figures.

I now turn to the meat and potatoes of the talk and outline requirements of basic research in the agricultural chemical business. Specifically what are the advantages, disadvantages, hazards, etc., that are inherent and peculiar to basic agricultural chemical research and what must top management consider when looking for maximum return on investment in such research? Just how might basic agricultural chemical research profitability measure up to industrial chemical basic research profitability, and why?

The prime function of a basic agricultural research program is to discover a new biologically effective compound. Since most compounds prepared in the laboratory are not sufficiently biologically active to merit consideration and since biological activity cannot yet be predicted, it is therefore necessary to "screen" (screens are biological tests designed to eliminate biologically ineffective compounds) each compound.

In a recent talk, two representatives of Carbide and Carbon Chemicals Co. reported that statistically about one compound out of 1800 will ultimately prove to be a really new biologically effective and profitable compound. The trouble is that preliminary screens do not immediately eliminate compounds which initially appear to be biologically effective, but which are later discarded. Many of these compounds go through expensive laboratory, greenhouse and field testing, only to be finally eliminated. The expense of testing the unprofitable compounds is added to the cost of the single survivor with result that as much as \$500,000 may be spent on screening 1,799 unprofitable compounds.

The program outlined so far is required if top management wishes to get a basic position in a novel family of biologically effective com-

pounds. Only a very large successful diverse chemical company or a very foolish or very wise small agricultural chemical company would embark on such a costly fundamental screening program. In actual practice, such programs, with few exceptions, can be maintained only by state or federal organizations or by very large diverse chemical corporations making solid profits in other fields of chemistry.

Large chemical organizations maintain such programs because they are producing in the course of business new and unknown chemicals which may have unexpected biological properties. Obviously, it would be to company advantage to have an exclusive position in both manufacture and use.

A large company must, therefore, decide whether it will conduct its own agricultural chemical research or whether it will use an outside commercial screening laboratory. Since most of the development of agricultural chemical pesticide industry has occurred in the last 25 years, it is probable that the future pattern of financing basic agricultural chemical screening research will change from what it now is.

But let us assume that research screening program has provided management with a novel fungicide that would eliminate all fungi from corn except one which caused it to ferment in one year and produce 100 proof 8 year old Bourbon whiskey.

The next step would be to comply with federal requirements. A first requirement is that any pesticide, harmless or otherwise, must be registered with USDA before it can be sold in interstate commerce. Such registration immediately brings up the question of the safety of a new agricultural chemical pesticide. Thus, before we have gone two steps in the field of agricultural chemical research, we run into an almost impenetrable jungle of research requirements constituting one of the recent laws of the land, the Miller Bill. Simply stated, the bill requires that any proposed new pesticide that leaves a residue be proven safe to human health. For purpose of organization and efficiency it is required by the Miller Bill that the information be gathered into seven sections, A-G, before the petition is submitted for consideration to government officials.

Section A requires information on the name, chemical identity and composition of the pesticide chemical. This section does not require much additional expense since the information can be obtained from previous results.

Section B of the petition comprises



GETTING SERVICE PROGRAM IN ORBIT—Salesmen of three divisions of International Minerals & Chemical Corp. met at the Sheraton Hotel, Chicago, for an intensive three-day training session on the firm's new "Full Orbit Service" plan to be directed to its customers. At left, IMC executives discuss the first day's program. Left to right, they are: Pat McGinnis, chairman of the board, Klau-Van Pietersom-Dunlap, Inc., Milwaukee advertising agency; A. E. Cascino, IMC vice president in charge of marketing; Thomas M. Ware, newly-elected IMC president; S. B. McCoy, sales manager; W. V. Chadwick, district sales manager, potash division; N. C. White, vice president, potash division; C. E. Martin, district manager of the agriculture department of potash division.

At the right are company executives in session at training program. Left to right, they are: H. F. Roderick, vice president, IMC phosphate chemical division; Mr. Ware; N. C. White, vice president, IMC potash division; F. B. Bowen, production manager, phosphate mineral division, and J. D. Zigler, general manager, plant food division.

*From talk presented before fifth annual Northwest Agricultural Chemicals Industry Conference, Portland, Ore., Jan. 23, 1958.

information on the amount, frequency, and time of application of the pesticidal chemical. Here it is necessary to provide evidence for each crop in each location and in quantity that probably would exceed information normally required for management decision. In other words, it must be proved in detail to USDA satisfaction that effectiveness claims made are based on actual experiment that duplicates commercial practice.

A most effective way to obtain such proof is to have USDA or qualified state agricultural authority witness or conduct the field tests. In practice, one year of field testing is usually required to convince management of the qualification of a new compound, but a second year and possibly a third is required to collect data to fulfill Section B requirements. If such data can be collected for less than \$75,000 it would be a most remarkable feat.

Section C requires information concerning safety of the prospective new agricultural chemical. Such data should include at least acute and chronic toxicity studies. According to a recent article, acute studies should be made on at least three species of animals, one of which should be a nonrodent. Also, other more subtle studies may be indicated, depending on acute and chronic study results. Perhaps a figure of \$50,000 might represent a minimum requirement of Section C provided the chemical turned out to be as harmless as water.

Section D requires information on the amount of residue remaining, together with a description of analytical method used. It is apparent that extra cost of developing a method might be very high since degree of accuracy of method depends to an extent on toxicity of chemical. For example in the case of a very toxic chemical used in such a way that "no residue" results, the method should probably be accurate to 0.1 ppm or even less. In some cases a radioactive method must be developed.

Also, it is required to prove sensitivity of method. For example by adding a known amount of pesticide to a blank sample a recovery rate can be determined. Thus, every bit of evidence must be proved, costly step by costly step.

For the purpose of Section D, it is, of course, necessary to have adequate replications so that no doubt of results may occur. For this purpose, 10 replications is a minimum number. Therefore, collection of field samples for residue analysis, together with field data, becomes a particular art. Number of analyses required for one pesticide on one crop might range from 100 to 1,000, assuming an adequate method is already available.

Since in many cases, treatment may be possible only one or two months in a year, it may be understood how a "too little, too late" development may delay a petition for a full year. Even though field tests required in Section B may be used very effectively for providing samples for laboratory analysis, it would be a happy occasion if expenses of Section D did not amount to at least \$75,000.

Section E involves residue removal procedures. Section E does not usually increase cost of fulfilling federal requirements since in most cases an excess residue removal procedure is neither possible nor necessary, however there are exceptions.

In Section F, the proposed tolerances are listed, based on data contained in other sections of the Petition. This section does not raise the cost of the Petition, since information is obtained from data provided in other sections.

Section G provides for reasonable grounds in support of the petition and may include references to pertinent literature, letters from growers, state and federal officials, etc., or any other evidence showing necessity of

use in the efficient cultivation of a particular crop. This section may or may not add greatly to petition expense, depending on field work involved. Probably \$10,000 is a minimum figure.

It is possible to register a new pesticide other than by Miller Bill procedure, but only if new pesticide is proven effective and harmless to human health. It may be proven harmless either by proving "no residue" or that the amount of residue is not harmful. But it should not be thought that such registration of a new pesticide is an inexpensive procedure, even though the \$1,000 fee required by Miller Bill to accompany petition for tolerance is not required.

Since it is a rare analytical method that will detect an amount of residue much less than 0.1 ppm, it is necessary to run certain toxicity studies to demonstrate safety. For example, even 0.1 ppm. residue on a raw agricultural commod-

ity is not "no residue" until it is proven that 0.1 ppm would be harmless. Even if the material had physical and chemical characteristics of water, or of alcohol, it would have to undergo biological studies. In other words, it is almost impossible for a new compound to forego all biological studies. Such a case would, theoretically, arise only when an analytic method of extreme sensitivity (less than 0.1 ppm) was at hand.

In summary, it can be said that basic agricultural research is always under the shadow of a possible minimum \$200,000 research expense that does not exist for industrial chemical research. This gives a disadvantage to basic agricultural chemical research profit compared to industrial chemical research profit. The handicap may amount to 5, 10 or even 20% depending on the research expense of industrial research program competing for the investment dollar.

Indeed, the handicap may be much greater if industrial screening methods are less expensive than agricultural chemical methods.

But what about the challenge, in face of future increasing population, of keeping meat on the American table and of doubling the number of calories produced per acre. It is my opinion that the basic research needed will be forthcoming but that return on investment in basic agricultural research has been handicapped by federally required research and that consequently it will not attract as much financial support from industry as it has in the rosy past.

Leon E. Williams Dies

WAGON MOUND, N.M.—A heart attack proved fatal May 26 for Leon E. Williams, 64, owner of ranches in New Mexico, Nebraska and South Dakota, director of the International State Bank in Raton, and owner of a fertilizer plant at Longmont, Colo.



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FERTILIZER SITUATION

(Continued from page 1)

Table 1. Nitrogen: Estimated supply of nitrogen for fertilizer purposes, 1956-57 and 1957-58, U.S. and possessions.

(1,000 short tons N)		
Item	1956-57	1957-58
Supply from domestic sources		
Solids:		
Ammonium nitrate	411	455
Ammonium sulfate	405	369
Urea	69	87
Ammonium phosphate	83	89
All other solids	99	
Total solids	1,067	1,099
Liquids:		
Ammonia (including aqua)	684	755
All other	511	565
Total liquids	1,195	1,320
Total (solids and liquids) ..	2,262	2,419
Imports		
Ammonium nitrate	65	71
Ammonium sulfate	37	30
Urea	24	29
Ammonium phosphate	23	27
Ammonium nitrate lime-stone mixtures	32	30
Sodium nitrate	80	80
All other	33	35
Total	294	302
Exports		
Ammonium nitrate	17	54
Ammonium sulfate	168	150
Urea	18	20
Ammonium phosphate	9	17
All other	56	80
Total	268	321
Net domestic supply	2,288	2,400

Table 2. — Phosphate: Estimated supply of P₂O₅ for fertilizer purposes, 1956-57 and 1957-58, U.S. and possessions.

(1,000 short tons of available P ₂ O ₅)		
Item	1956-57	1957-58
Supply from domestic sources		
Normal and enriched	1,446	1,313
Concentrated	799	875
Ammonium phosphate	144	155
All other	149	150
Total	2,538	2,493
Imports		
Ammonium phosphate	39	45
All other	15	17
Total	54	62
Exports		
Normal	73	51
Concentrated	126	176
Ammonium phosphate	26	48
All other	31	45
Total	256	320
Net domestic supply	2,336	2,235

Table 3. Potash: Estimated supply of K₂O for fertilizer purposes, 1956-57 and 1957-58, U.S. and possessions.

(1,000 short tons K ₂ O)		
Item	1956-57	1957-58
Supply from domestic sources		
Muriate	1,982	1,806
Sulfates	137	112
Manure salts	3	1
All other	20	20
Total	2,142	1,939
Imports		
Muriate	142	158
Sulfates	25	23
All other	12	14
Total	179	195
Exports		
Muriate	260	215
Sulfates	34	17
All other	21	31
Total	315	263
Net domestic supply	2,006	1,871

Table 4. Percentage of synthetic ammonia production capacity, fertilizer nitrogen use, and harvested acreage of 59 principal crops, by regions in the continental U.S.

Region	Synthetic ammonia capacity Jan. 1, 1958 %*	Nitrogen used		Harvested acreage of 59 principal crops, 1955 %†
		Year ended June 30, 1950 %‡	Year ended June 30, 1956 %‡	
North Atlantic	4.2	8.3	6.2	4.5
South Atlantic	23.0	30.2	21.8	7.0
East North Central	15.4	9.9	14.3	18.3
West North Central	10.6	6.3	12.9	40.4
(North Central)	(26.0)	(16.2)	(27.2)	(58.7)
South Central	34.3	30.1	26.1	18.2
Western	12.5	15.2	18.7	11.6
Total U.S.	100.0	100.0	100.0	100.0

*Based on data from the Business and Defense Service Administration, U.S. Department of Commerce.

†Based on fertilizer consumption reports of the Fertilizer Investigations Research Branch, Soil and Water Conservation Research Division, ARS, U.S. Department of Agriculture.

‡Based on data from Agricultural Statistics—1956, U.S. Department of Agriculture.

Table 5. Aerial application of fertilizer in continental U.S., 1955 and 1956*.

Year	Acres treated	Dry fertilizers (pounds)	Liquid fertilizers (gallons)	Flight hours	Acres per hour
1955	2,576,000	325,984,000	809,000	62,550	41.2
1956	2,393,000	295,405,000	867,000	62,890	38.0

*CAA Office of Flight Operations and Airworthiness, Annual Survey of Aerial Work Aviation Activities.

WHAT IS SUPPLY?

In the Fertilizer Situation Report, the U.S. Department of Agriculture defines net U.S. supply of primary plant nutrient materials as the quantity available for domestic fertilizer purposes. It includes supply from domestic production, plus imports and minus exports. By supply from domestic sources is meant U.S. production for fertilizer purposes adjusted for inventory differences that are known or can be estimated. Estimates of supply are limited to the quantities that have actually moved or are estimated will move into fertilizer trade channels.

the above uses in addition to that used in the manufacture of concentrated superphosphate and ammonium phosphates.

In-place capacity for producing concentrated superphosphate by plants with phosphoric acid facilities is estimated to have totaled about 975,000 tons of P₂O₅ last Jan. 1, according to the report. Other plants with acid facilities which are engaged primarily in production of other phosphatic fertilizers may produce some concentrated superphosphate. Also, concentrated superphosphate is produced in a number of normal superphosphate plants from purchased acid.

The number of ammonium phosphate producers is growing. USDA estimated that by mid-1958 ammonium phosphate plants capable of producing about 316,000 tons of P₂O₅ per year will be in operation.

USDA said in the report that deliveries of potash during the first seven months of the fertilizer year lagged behind those of the past three years.

Expansions by some of the older companies as well as developments by new companies within the last two years have increased domestic potash production capacity to an estimated 2,500,000 tons of K₂O per year, USDA said. In addition, six major U.S. potash producers as well as some Canadian and European firms have obtained licenses to prospect potash deposits in Saskatchewan, Canada.

In comments on potential fertilizer markets, USDA noted that considerable interest has been shown in the possibility of increasing forest products production by fertilizer application. More land is used for commercial forest (485 million acres) than is used for the principal harvest food and fiber crops (333 million acres). Nearly one million acres per year are being planted to trees.

The federal highway program will change the use of more than one million acres of land in addition to that actually paved, opening up new opportunities for fertilizer use in the establishment of turf and shrubbery along roadsides.

Use of fertilizer by gardeners and on cemeteries, recreation areas and other off-the-farm areas, is taking an estimated 10% of total fertilizer consumption, and this use is expected to continue growing.

USDA said that increased fertilization of larger cropland acreage will be necessary to meet future agricultural production requirements. For example, USDA said, about 59% of the harvested acreage of the 59 principal crops in this country is located in the North Central states (Table 4). Soil tests in this area show that plant nutrient levels in the soils of the area are inadequate for optimum crop production.

FLORIDA TONNAGE

TALLAHASSEE, FLA.—April fertilizer shipments in Florida totaled 196,666 tons, according to the Florida Department of Agriculture. This included 140,498 tons of mixed goods and 56,168 tons of materials.

PURCHASES

(Continued from page 1)

tions with Federal Land Bank officials at Louisville.

The local Land Bank official serving the states of Kentucky, southern Ohio, Indiana and Illinois, said that these loans were primarily for equipment and machinery as a replacement of farm labor. The current level of these loans at this branch of the Federal Land Bank is a record for this institution, the bank official stated. The loans are short term credits.

At the same time in reporting on the financial pulse of the farm community within his jurisdiction, this bank official said that their current collection record is the best it has ever been at the bank.

The area covered by the operations of this branch of a Federal Land Bank of course represents a two commodity community wherein there is a substantial livestock and swine population to consume home grown grains. But it is a sizeable slice of the farm economy of the nation and certainly a good cross-section rather than a blue-ribbon showplace.

But this information must be more than some bare statistics and an accurate measure of the pulse beat of those states. It is a business weather report nearly a year in advance. It is a signpost of responsibility of the fertilizer and pesticidal chemical industries of their job yet to be done.

If those farmers who have made this commitment in purchases of labor saving equipment are to be able to obtain the gains they hope, then the chemical industries should take cognizance of those conditions and prepare to educate those far-sighted farmers, reminding them that to obtain maximum efficient results from these purchases of equipment and machinery, they must use it all on the best basic soil conditions.

Not only is this a responsibility of the fertilizer industry, it is also a golden opportunity to talk to farmers by their gates and in the field and point out the fertilizer sales gospel. They must be told that for every additional pound of plant food used, those new machines can be made to pay off well above the expectations of the buyer and even of the seller of the equipment.

With this token information concerning the farmer outlook for the year ahead, it provides a guide post for the sales management and advertising forces of the chemical companies to translate this basic information into terms of sales potentials for the coming fertilizer year.

EXCISE TAX

(Continued from page 1)

ever, even on this showing of great uncertainty, the Florida Democrat declined to give up hope of success. Whether or not he can achieve his goal now rests on the support he may get from shipping interests, particularly the farm commodity groups which are especially singled out for penalties as this tax is imposed.

Sen. Smathers told the Senate that this excise tax had its origin during World War II when it was imposed to discourage freight tonnage. Since that time, with this necessity removed, the excise tax has become an outright revenue measure producing nearly \$485 million annually to the federal government.

That near half billion dollar revenue to Uncle Sam is a gross amount, Sen. Smathers stated. After allowances are made, income charges to the carriers make the net amount gained by the federal treasury only some \$225 million.

However Sen. Smathers continued his argument by citing competent railroad economists who said that if the tax were to be eliminated entire-

ly, the carriers would probably regain 20% of freight business now moving in private haulage with a resultant increase in income tax payments producing a clear cash gain to the treasury of about \$25 million.

The discriminatory aspects of the excise tax on freight is an old story but worthy of repetition since at this critical time it is possible that shippers of commodities to farmers, as well as farm shippers themselves, may wish to add their weight in this controversial issue in a hope that the Smathers proposal can gain approval.

It seems probable that most shipments of agricultural chemicals to the farm must carry this added excise tax on invoices of necessary items of farm operation. Few farmers probably see it as a tax, but regard it as part of their fertilizer or chemical bill.

The discriminatory aspect is more precisely pointed up when one realizes that the same commodity shipped from a more distant point carries a higher excise impost than nearby movements since the tax is imposed on the total freight bill.

Likewise, the west coast farm shippers of fruits and vegetables in paying this excise charge must pay a higher tax bill than on similar shipments from areas closer to the Eastern urban markets.

The Smathers bill proposing this excise tax repeal is an amendment to House Rule 7125 in which the House Ways and Means Committee would extend present levels of excise taxes for the coming year. This condition makes the path of the Smathers proposal even more difficult, but since this excise is so obviously weak in itself, it may be possible that it can gain sufficient strength and support to get the Senate to take the initiative and approve it.

Of particular interest at this time is the fact that the farmer is still in a cost-price squeeze and to the extent that the cost side of his problem can be eased, removal of this discriminatory impost may seem widely desirable once the facts are made known.

COTTON PROPOSAL

(Continued from page 1)

ed out, is further hardship for people in communities and states whose economic welfare is tied closely to cotton and cotton textile production.

He urged that the following steps be taken:

(1) Adoption of a "choice plan" (a program giving each farmer a choice between higher acres and lower price or low acreage and higher price) as a transitional program pointed toward a competitive, one-price system, coupled with a permanent program under which the price would be at or move to a competitive level as soon as possible. The program should avoid problems involved in the present law, which fails to take cotton's competition into account.

(2) In determining marketing quotas and acreage allotments, provision should be made for adequate supplies of cotton both in the U.S. and abroad, with due allowance for the quality requirements of the market and for the large margin of error which is inherent in forecasting production, consumption and exports a year or more ahead. Provision also should be made for increasing established allotments by administrative action in the event a quality shortage should develop after an allotment has been announced.

(3) Farmers should be permitted, under reasonable regulation, to transfer allotments within a county or state under a rental or purchase arrangement.

University of Illinois Takes Own Advice On Soil Improvement

URBANA, ILL.—This spring the University of Illinois begins its 12th year as landlord on the more than 3,700 acres of Allerton Trust farms. In October, 1946, Robert Allerton gave the University his 1,500-acre park, formal gardens and mansion and 3,775 acres of farm land. The land was divided into eight farm units ranging in size from 235 to 712 acres.

When the university accepted this gift, management of the farms was assigned to farm management specialists in the department of agricultural economics. Following the principles taught in the farm management classes, the farm managers set out to test the soil on all of the land and map out a soil improvement plan.

Some soil improvements had been made on the farms before they were

given to the university. But the farm managers point out that good yields year after year come only from continuous soil improvement. When the farms were given to the university, that year's corn crop was included. Most of the money from the sale of this crop was spent for lime and phosphate—about \$37,700 worth.

Heavy plant food treatments, based on soil tests and crop yields, have been continued every year since. J. B. Cunningham, associate professor of agricultural economics and manager of the farms since 1953, reports that 1,215 tons of limestone and fertilizers were applied to the farms in 1957. If all of this material had been shipped in at one time, it would have filled 30 box cars each holding 40 tons.

The soil improvement program has paid off in higher yields. For example, comparing yields for the first five years (1947-51) under university ownership with the last five (1953-57) shows that average corn yields have gone from 66 to 79 bu. an acre. Soy-

bean yields have moved up from 29 to 32 bu. Wheat yields have leaped from 29 to 41 bu. Oat yields have jumped from 49 to 66 bu.

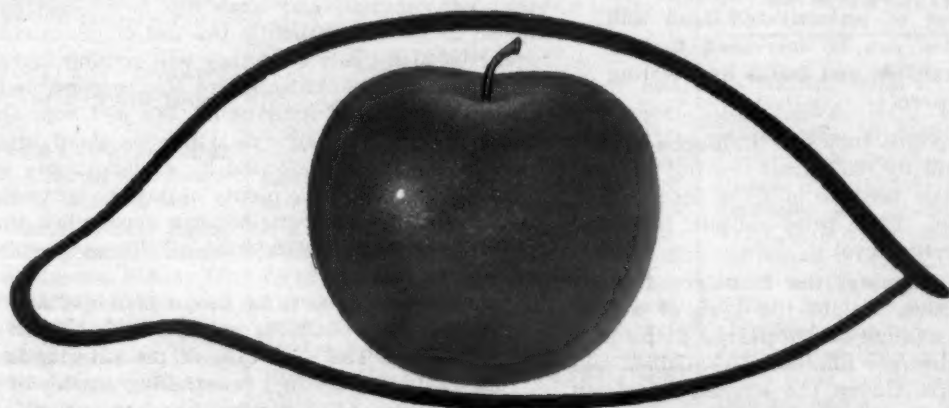
Use of top-quality seed, good farming practices by the operators and good weather have helped, but soil improvement should get a major part of the credit for these yield gains, Mr. Cunningham emphasizes.

Pecan Casebearer in Bothersome Role in Texas

EASTLAND, TEXAS—Texas pecan growers have an excellent prospect for a high yield providing they can stop the troublesome pecan casebearer. Due to wet weather the last several weeks, entomologists say the casebearers have increased to damaging numbers.

H. C. Stanley, county agent, says that one or two additional sprayings will be needed to control the insects. He has found numerous larvae in the tender young shoots that have developed the last few weeks.

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Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Northeastern states.

Fertilizer Can Make Up for Acres Lost to City Lots

LOSSES of agricultural lands to urban developments surrounding various California cities have frightened many persons because of the prospect of future food shortages. These transfers of farm lands into city lots amount to some 80,000 acres a year in California, and critics of the trend have asked for legislation to limit urban expansion.

Other experts, however, fail to get excited about the apparent encroachment. Two University of California observers have expressed the viewpoints of those who oppose any such legislative action and deny the danger of a food shortage because of urban development.

These men, Dr. James Gillies, associate professor of real estate and urban land economics, and Dr. Frank Mittelbach, graduate research economist, declare that crop land lost to real estate developments can easily be replaced by drawing on the state's 6,000,000 acres of uncultivated land and food production can be increased further on existing orchards and farms by boosting the yield per acre.

As a case in point, they cite California's fruit output. From 1946 to 1957, fruit-bearing acreage decreased 18%, but because of more intense and skilled cultivation, the total output remained roughly on the same level.

Legal barriers against the transfer of lands would be ineffective, violate the laws of a free economy, and go against the preferred living pattern of many California families, Drs. Gillies and Mittelbach declare. Under the normal operation of the price system, the land will always go to the highest bidder, in this case the homebuilder. If and when agricultural land becomes scarce, its cost will go up sufficiently to price residential developers out of the market.

And in the meantime, in order to realize the maximum yield from remaining acres, growers are going to be using greater amounts of plant food and will be more conscientious in the application of pesticides to prevent losses to insects and plant diseases.

Research to Determine if Pesticides Harm Wildlife

THE research project soon to be launched by the U.S. Department of the Interior to determine just what effect the use of pesticides might have on fish and wildlife, should go a long way in determining, once and for all, whether the slings and arrows of outraged bird lovers against pesticides are based on fact or fancy. Federal funds for this purpose appear to be fairly certain in coming, and many people and groups, aside from the pesticide industry itself, are eager to get the study under way.

Members of the Audubon Society, Garden Clubs of America and others have opposed mass applications of pesticides on the assumption that such actions kill too many birds, fish, earthworms, and game animals along with the unwanted insects. These folks have been urging a study for some time now, and of course hope the findings will show that pesticides, in fact, are too destructive to be justified. Control programs directed against the fire ant, the gypsy moth, Mediterranean fruit fly and other dangerous pests have brought storms of protest from some of these groups and the question still remains in the minds of too many people whether such programs are justified.

Government entomologists and others closely associated with the situation have expressed confidence that a survey of the type proposed will vindicate the pesticide industry and will provide an opportunity for

the entomologists and other scientists to present their side of the matter in a relatively calm atmosphere. This will be in marked contrast to the hysterical type of goings-on growing out of the gypsy moth and fire ant programs.

Government officials have told John Cipperly, Croplife's Washington correspondent, that the proposed basic research might well bridge the gap between groups whose common aim is the public good, but whose ideas on how to attain these ends are widely divergent. A sensible and scientific approach to the whole subject should provide ground for common agreement. As Mr. Cipperly put it in a recent dispatch, "It is the amphitheatre wherein the protectors of wildlife and game can find a common cause with the persons whose duty it is to protect food and fiber production at a level which will sustain the food requirements of the population of this nation and our free world allies."

It is fairly certain that the opponents of pesticides will bring up all sorts of incidents to "prove" that fish, animals and birds are being destroyed in wholesale quantities by the use of insecticides, and it is also likely that they will remind investigators that these toxicants are also responsible for many of the ills of humankind. We just hope that those making the surveys will give equal attention to the facts presented by entomologists and toxicologists who have plenty of data to prove that the careful use of pesticides can accomplish their purposes without endangering all life on the planet.

The survey is to be broad in scope, and should bring out facts only partially known heretofore. The Secretary of the Interior is instructed to conduct "continuing studies of the effects of insecticides, herbicides, fungicides, and pesticides upon fish and wildlife for the purpose of preventing losses of those invaluable natural resources following application of these materials, and to provide basic data on various chemical controls."

That this is a heavy and comprehensive assignment is seen from the outline above. The outcome of this basic study should be highly significant and far-reaching, and will certainly form a benchmark from which the industry may proceed in the future.

Investments in Good Fertilizer Seen as Lasting

FARMERS will be feeling the effects of the recession before very long, according to four University of Illinois agricultural economists who took part in a recent panel in Urbana. The economists reminded that farm prices are currently high largely because supplies of livestock, fresh fruits and vegetables and eggs are lower than they were a year ago.

Hard winter freezes in the South were the major cause of rising fresh fruit and vegetable prices, while reduced production of eggs has contributed to the increase in prices of that commodity.

During the next 6-12 months, however, farmers can expect to see the all-farm price average drop below the present level, the economists warn. They remind that in the 1954 recession, farm prices hit their low point about 16 months after the low point in industrial production. "A similar trend could occur again," the group said.

With a strong trend toward inflation, farmers were advised to invest in ownership of land, livestock and capital goods rather than holding on to money that is losing its purchasing power.

It seems that this would indicate continuing investments in fertilizers and pesticides to assure the grower of maximum yield and lower production costs to counteract trends seen by these economists and others who keep an eye on the up and down fluctuations of our complicated economy.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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MEETING MEMOS

June 9-11—Association of Southern Feed & Fertilizer Control Officials, Heart of Atlanta Motel, Atlanta, Ga., Bruce Poundstone, University of Kentucky, Lexington, Ky., Secretary-Treasurer.

June 12-14—Manufacturing Chemists' Assn., 86th Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va.

June 15-18—National Plant Food Institute, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 16-17—Rural Development Program Conference, Peabody Hotel, Memphis, Tenn.

June 16-19—Western Society of Soil Science, Logan, Utah.

June 17-19—Second Annual Turfgrass Conference and Tour, Tidewater Research Station, Holland, Va.

June 17-19—American Grassland Council's Annual Meeting, in conjunction with American Dairy Science Assn., Raleigh, N.C.

June 24—West Virginia University Agronomy Field Day, Reymann Memorial Farms, Wardensville, W. Va.

June 25-27—Pacific Branch, Entomological Society of America, San Diego, Cal.

June 28—Del-Mar-Va Peninsula Fertilizer Assn., Annual Meeting, Ocean City, Md.

July 8-10—Pacific Northwest Plant Food Assn., Ninth Annual Regional Fertilizer Conference, Pocatello, Idaho.

July 11-12—Pacific Northwest Section, American Society of Range Management, Summer Meeting, Kamloops, B.C.

July 13-16—American Society of Agronomy, Northeast Branch, Cornell University, Ithaca, N.Y.

July 13-15—Plant Food Institute of Virginia and North Carolina, Summer meeting, Cavalier Hotel, Raleigh, N.C.

July 17-18—Southwest Fertilizer Conference and Grade Hearing, Bucaneer Hotel, Galveston, Texas.

July 24—West Virginia University Agronomy Field Day, Ohio Valley Experiment Station, Point Pleasant, W. Va.

July 29-30—Annual Fertilizer Industry Conference Sponsored by the Alabama Polytechnic Institute Experiment Station; Black Belt Substation near Marion Junction, Ala. (July 29) and Prattville, Ala. Experiment Field (July 30).

July 30—Kentucky Fertilizer Conference, Greenville, Ky.

Aug. 4—National Joint Committee on Fertilizer Application, Annual Meeting, Purdue University, Lafayette, Ind.

Aug. 4-8—American Society of Agronomy, Annual Meeting, Purdue University, Lafayette, Ind.

Aug. 20-24—Canada Fertilizer Assn. (formerly Plant Food Producers of Eastern Canada), Annual Meeting, Manoir Richelieu, Murray Bay, Quebec.

Sept. 4—Grassland Field Day, Rutgers University Dairy Research Farm, Beemerville, N.J.

Oct. 14-15—Western Agricultural Chemicals Assn., Annual Meeting, Villa Hotel, San Mateo, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Oct. 20—Annual Sales Clinic of Salesmen's Assn. of the American Chemical Industry, Inc., Roosevelt Hotel, New York.

Oct. 20-21—Fertilizer Section, National Safety Council, annual fall meeting, La Salle Hotel, Chicago, Ill.

Oct. 22-24—Pacific Northwest Plant Food Assn., Annual Meeting, Gearhart, Ore., Leon S. Jackson, P.O. Box 4623, Sellwood-Moreland Station, Portland, Ore., secretary.

Oct. 28-29—Northwest Garden Supply Trade Show, Masonic Temple, Portland, Ore.

Oct. 29-31—Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D.C.

Oct. 29-31—National Agricultural Chemicals Assn., 25th annual meeting, Bon Air Hotel, Augusta, Ga.

Nov. 9-11—California Fertilizer Assn., 35th Annual Convention, Ambassador Hotel, Los Angeles, Sidney H. Bierly, 475 Huntington Drive, San Marino 9, Cal., General Manager.

Nov. 18-20—Washington State Weed Conference, Moses Lake, Wash.

Nov. 24-25—Entomological Society of America, Eastern Branch, Annual Meeting, Lord Baltimore Hotel, Baltimore.

Dec. 1-4—Entomological Society of America, Annual Meeting, Hotel Utah, Salt Lake City.

Dec. 3-5—Agricultural Ammonia Institute, Annual Meeting, Morrison Hotel, Chicago, Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 9-11—Chemical Specialties Manufacturers Assn., Annual Meeting, Commodore Hotel, New York.

Dec. 17-18—Beltwide Cotton Production Conference, Rice Hotel, Houston, Texas, sponsored by the National Cotton Council.

Jan. 20-22, 1959—California Weed Conference, Santa Barbara, Cal.

MADE BOARD MEMBER

CLEVELAND, OHIO—J. Robert Killpack was elected comptroller of Ferro Corp., to fill the vacancy created on April 29 by the death of Joseph C. Wessel.

New Edition of 1956

Soil Book Reviewed

"FARM SOILS: THEIR MANAGEMENT AND FERTILIZATION," by Edmund L. Worthen and Samuel R. Aldrich. 5th edition. 439 pp. Illustrated. 1956. New York: John Wiley & Sons, Inc. \$4.96.

The authors deal with both the principles and practices of soil management in simple terms for students and farmers who may have had no previous experience in either chemistry or soil science. Technical terms are held to a minimum. It explains principal characteristics and qualities of soil that determine their responses to different practices for efficient, sustained crop production. Although a 5th edition under a well known title, this is essentially a new book and considerably better than its predecessors.

The book deals primarily with the soil management practices and systems for the humid, temperate northeastern one quarter of the U.S., roughly east of the Great Plains and north of the cotton line. It will be useful but less specific for those living in other parts of the U.S.

The balanced discussions of practical soil management practices and of the principles that underlie them are helpful. Soil conservation is conceived as an integral part of the soil management system for a field or farm. The reasons for the basic differences among the different kinds of soil are explained and related to a discussion of practices.

The book is well illustrated and contains useful suggestions for field studies, including special soil judging schools and farm selection. Besides being useful as a text in high schools or in more advanced schools where practical soil science is scheduled before chemistry, the book will be useful for farmers and others. It is a good refresher book for those who have studied chemistry and soil science a long time ago with few opportunities "to keep up" with these subjects since.

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GENEVA, N.Y.—Cornell scientists at the New York State Agricultural Experiment Station at Geneva have issued a publication containing 20 questions and answers about nematodes. It is estimated that damage to cultivated crops in the United States from nematodes amounts to half a billion dollars annually. "It is probable that nematodes account for several million dollars crop loss annually in New York state," say the station scientists.

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